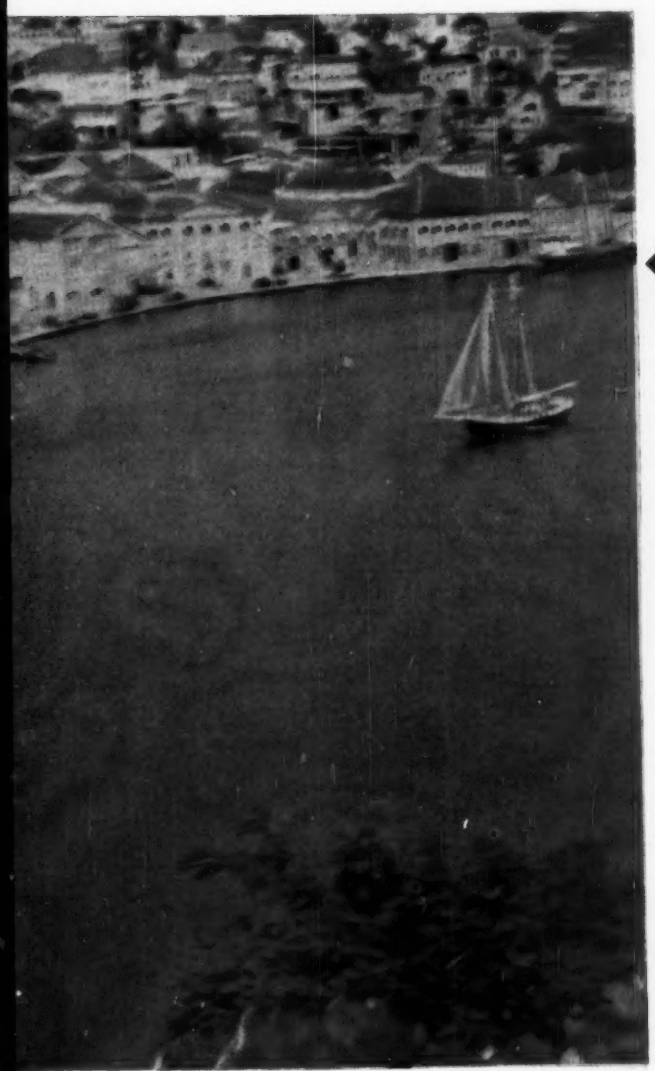
A McGRAW-HILL PUBLICATION

Chemical Week



Big new ethylene plant at Beaumont jolts Gulf Coast supply outlook . . . . . p. 25

Vacation from taxes in Caribbean. That's Colon Free Zone's lure for U.S. exporters . . p. 35

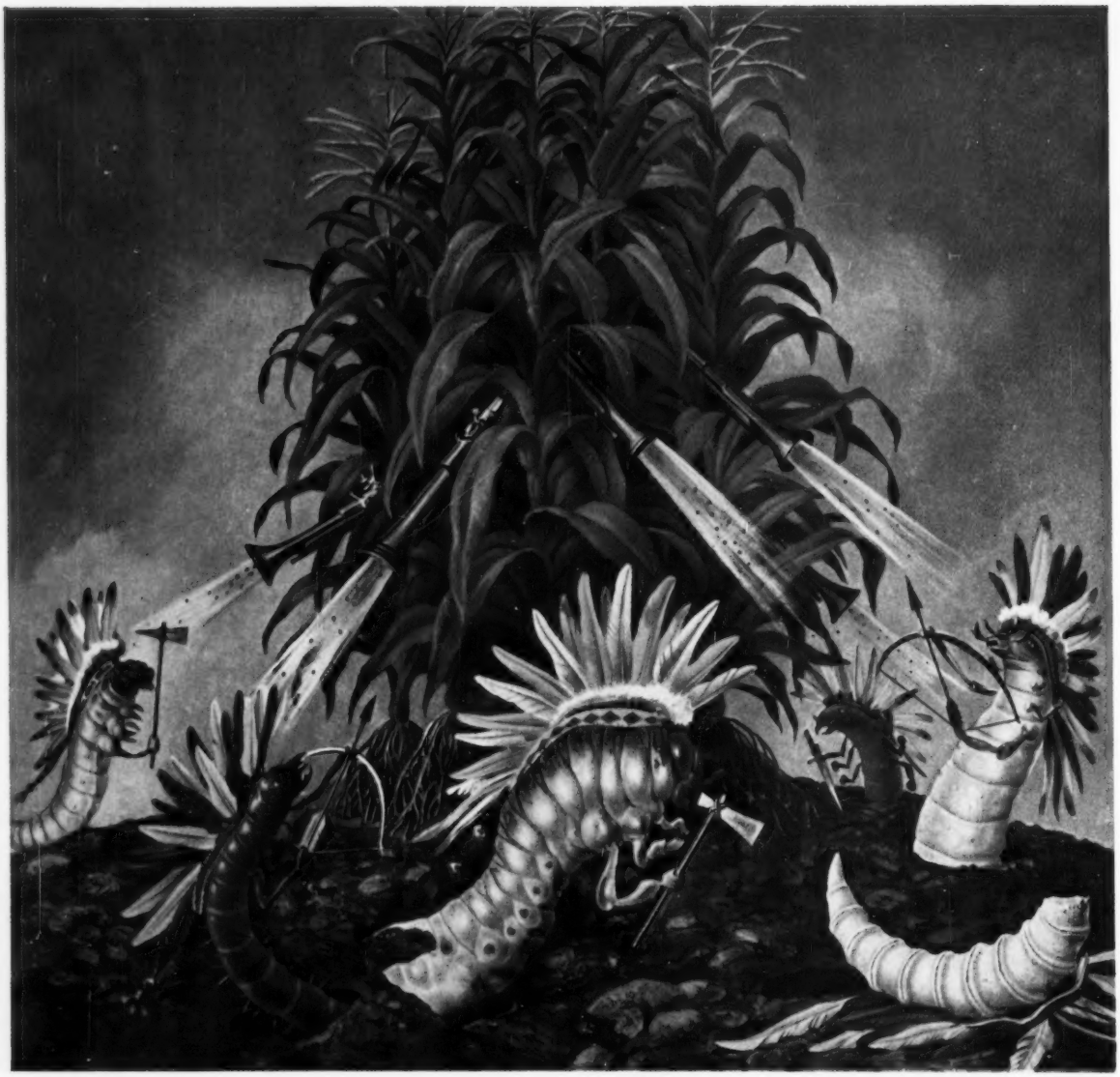
Is your foreign patent policy sound? Shifting trade lineup means new opportunity. p. 48

Case for nuclear process heat bolstered by new cost data. Here's the outlook. . . . . p. 55

Aluminum makers gird for battle as foreign marketers take the offensive . . . . . p. 69

March 14, 1959

STEVENS RICE
UNIVERSITY MICROFILMS
315 N 1ST ST
ANN ARBOR MICH



A firm stand against the war party

ONCE a cornfield was helpless prey to marauding soil pests. But now they've met their match and more in Shell Chemical's insecticide, *aldrin*.

Applied before or during planting, aldrin kills such destructive soil insects as corn rootworms, wireworms, cutworms, seed corn maggots and white grubs whether they touch, taste, or breathe it. The result: protected feeder roots make bigger corn; cornstalks stand up against wind and storm. At harvest time they reach straight for the sky for efficient mechanical picking.

Providing "a firm stand" for corn and other crops by protecting roots from soil insects is one of the many ways Shell Chemical serves the farmer.

Shell Chemical Corporation

Chemical Partner of Industry and Agriculture

NEW YORK

SHELL

North American Car Corporation

EXPANDS and DIVERSIFIES

with TERMINAL SERVICES

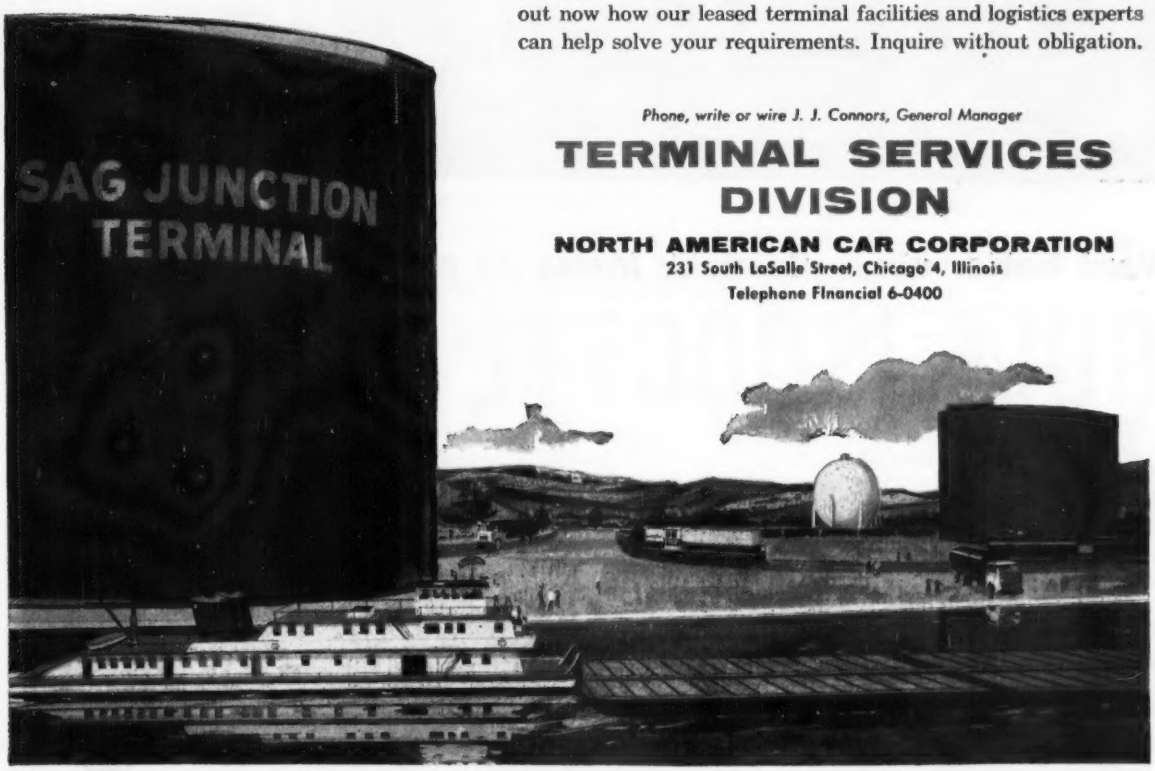
NORTH AMERICAN'S Sag Junction Terminal at the gateway to a vast and growing market in Chicagoland and in the Midwest.

Expansion at Chicago provides strategic terminal facilities and acreage on the Illinois Waterway and Cal-Sag Channel; more storage tanks planned for liquid and granular products in bulk

Through acquisition of the Alexander Chemical Corporation, North American now offers a wide range of terminal services at Chicago's doorstep. Served by low-cost water transportation and all modes of heavy transport, Sag Junction Terminal provides retail distribution of your product direct to the industrial heart of greater Chicago and the Midwest.

By storing large amounts of your product near the market, you can give quick, efficient, on-time service to your Chicago customers. Large inbound transportation savings are possible through bulk shipments by water. You have efficient rail service of the Gulf, Mobile and Ohio Railroad and highway access to principal customer areas.

North American's Sag Junction Terminal is just like having a plant in Chicago—*without a cent of capital investment by you!* Find out now how our leased terminal facilities and logistics experts can help solve your requirements. Inquire without obligation.



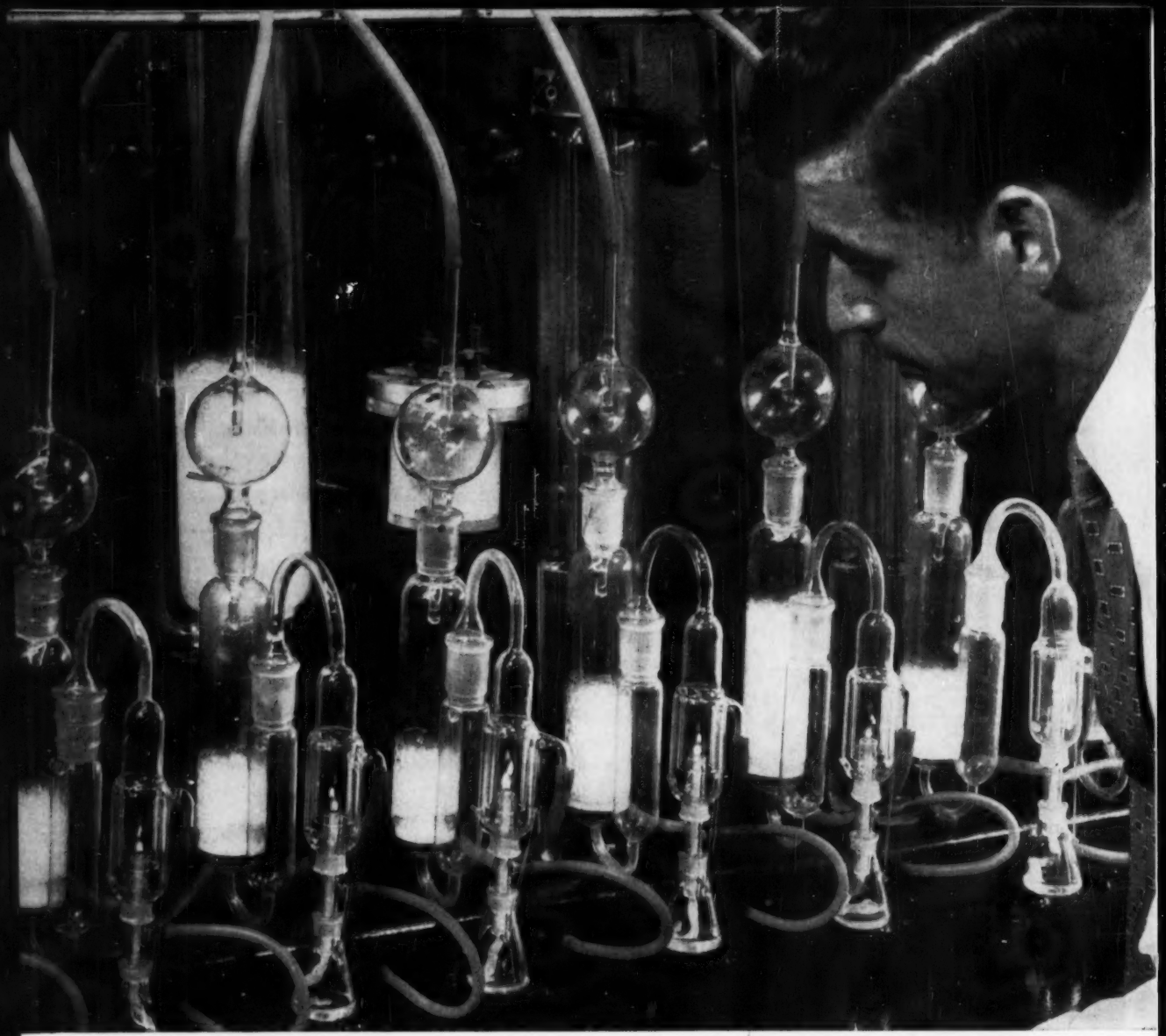
Phone, write or wire J. J. Connors, General Manager

TERMINAL SERVICES DIVISION

NORTH AMERICAN CAR CORPORATION

231 South LaSalle Street, Chicago 4, Illinois

Telephone Financial 6-0400



Lamp sulfur test helps safeguard the quality of Gulf Isooctyl Alcohol

Want better vinyl plastics? Insist on plasticizers made with

GULF ISOOCTYL ALCOHOL

It's as simple as one, two, three.

1. Every carload of Gulf Isooctyl Alcohol meets the highest standards of purity and uniformity . . . and it's backed by Gulf research and experience in oxo-chemistry.
2. Di-ester plasticizers made with Gulf Isooctyl Alcohol are low in color, high in stability.
3. Using these plasticizers, you can improve your process and get better end products.

For information, write or phone.

PETROCHEMICALS DEPARTMENT • Gulf Oil Corporation • Gulf Building, Pittsburgh 30, Pa.

QUALITY CHEMICALS *from* PETROLEUM

Aromatics · Ethylene · Propylene · Propylene Trimer and Tetramer · Oxo Products · Sulphur

GULF

Chemical Week

TOP OF THE WEEK **MARCH 14, 1959**

- **Spevack's atomic-secrets patent case reaches Supreme Court.** Inventor pleads for full patent rights ..... **p. 26**
- **Stronger competition in flavor-fragrances looms** as Van Ameringen-Haebler merges with Polak & Schwarz ..... **p. 79**
- **Do equipment makers have a legitimate gripe?** "Service heavy" concerns complain about pirated designs ..... **p. 85**
- **What's the breakeven point on credit training for salesmen?** Here's the consensus ..... **p. 91**

7 VIEWPOINT

16 OPINION

21 BUSINESS NEWSLETTER

25 Socony Mobil blueprints giant high-purity ethylene plant and pipeline for Gulf Coast

26 Last stop for Jerome Spevack's patent suit. Hard-fought atomic secrets case is heard by Supreme Court.

27 Changing policy on trade with Soviet bloc? Commerce Secretary Strauss sparks new speculation.

28 Italy's second biggest chemical giant, Societa Edison, seeks U.S. partners.

28 Antitrusters zero in on ten rubber companies. Charge: price fixing on flexible belting.

29 Dept. of Interior gives green light to Badger's $2-million water desalting unit.

31 WASHINGTON NEWSLETTER

35 ADMINISTRATION
One way to hike export profits: Use "tax havens" such as Colon Free Zone.

38 Chicago jolted by rumors of mass layoffs of technical personnel.

48 RESEARCH
Time to reappraise your foreign patents. New trade alignments alter problems, opportunities.

55 ENGINEERING
New plans for nuclear process heat cite costs roughly equal to fossil-fuel heat generation.

60 New fluid mining technique proposed for recovery of low-grade phosphates.

65 TECHNOLOGY NEWSLETTER

69 MARKETS
Aluminum — big new market needed to dispel gloom of overcapacity, threats of murderous foreign competition.

75 MARKET NEWSLETTER

79 SPECIALTIES
Van Ameringen-Haebler-Polak & Schwarz merger will put new emphasis on synthetic flavors and fragrances.

85 PRODUCTION
Equipment makers problem: how much design know-how can be risked in bids for process plant jobs.

91 SALES
Credit managers want more credit training for salesmen, *CW* study shows.

96 BUSINESS BENCHMARKS

PHOTO BY FRITZ HENLE, COURTESY HOLIDAY MAGAZINE

42,808 copies of this issue printed

Vol. 84
No. 11

Chemical Week is published weekly by McGraw-Hill Publishing Co., Inc., 330 W. 42nd St., New York, 36, N. Y. Place of publication: 3rd and Hunting Park Ave., Philadelphia 40, Pa. Second-class postage paid at Philadelphia. Subscription: $3/year in U.S.A. Send subscription correspondence and change of address to Fulfillment Manager, Chemical Week. Please see page 7 for subscription requirements.

Postmaster: Please send Form 3579 to Chemical Week, 330 West 42nd St., New York 36, N. Y.

"Not one broken bag with WONDERWALL®!"

"The biggest breakage problem in our plant had been when bags were moved from one place to another by cart or hand truck. Now, with WONDERWALLS we've eliminated that problem. Three thousand tons of meal are packed in 100,000 50-pound WONDERWALLS because they do the job," Mr. Paulson says.

"WONDERWALLS stack—and stay stacked," reports Mr. Paulson. "Bags don't slip when they're piled one on top of the other. This is a great advantage from the hauling standpoint. There's no shifting in the truck or railroad car as a result of quick starts and stops. They just seem to conform to each other. WONDERWALLS stay that way until they're unloaded."

"Since we started using WONDERWALLS, we've never had a broken bag! When we were using regular kraft, we'd send out a truckload of alfalfa meal and we'd get back 10 or 12 broken bags every time. WONDERWALLS changed all that," reports H. A. Paulson, Owner, Paulson Dehydrated Products Company, Luverne, Minnesota.

An unusual case history? Quite the contrary—it's typical! Everywhere that WONDERWALLS are put to work, the report is essentially the same:

WONDERWALLS *reduce breakage in a big way or eliminate it altogether.*

WONDERWALLS outperform ordinary bags because they're made of Clupak* kraft—the remarkable paper with the built-in stretch. Result: WONDERWALLS stand up under the rough and tumble punishment that breaks ordinary multiwalls. That's not all. WONDERWALL bags pack faster, handle easier and stack better. And save you money. There is no other bag on the market today that can match WONDERWALL performance.

Best of all—WONDERWALLS cost no more.

Try this new, superior multiwall. Order a trial shipment of 5000 WONDERWALLS on your next carload. Write Multiwall Bag Division, West Virginia Pulp and Paper Company, 230 Park Ave., New York 17.

Clupak, Inc's. trademark for extensible paper manufactured under its authority.

See it at our exhibit,
AMA Packaging Exposition, Chicago

West Virginia Pulp and Paper

EXPLORE THE HYDROXYLAMINES!

Unique reactivity characteristics excite industry
New applications discovered daily

Hydroxylamine salts have reactivity characteristics possessed by no other chemical. Already being put to work in a wide range of uses, these versatile nitroparaffin derivatives offer exciting potential to all chemical explorers.

FOR SYNTHESIS For making oximes, hydroxamic acids and numerous intermediates, for preparation of anti-skinning agents, anti-rusting agents and pharmaceuticals.

AS ACID-STABLE REDUCING AGENTS For metallic ions such as ferric, cupric, silver and for nonmetallics such as dyes, peroxides and nitrates. For purification processes, dyeing of acrylic fibers and as a short-stopper for catalyzed polymerization reactions.

FOR OXIDIZING The hydroxylamines are probably mild oxidizing agents in alkaline solutions. Further explorations called for.

EFFECTS ON PROTEINS AND BIOLOGICAL SYSTEMS For inhibiting enzymes such as catalase, for hardening gelatine. Derivatives are good fungicides and bactericides. This is a relatively unknown "land" ideal for pioneering.

NOW AVAILABLE IN COMMERCIAL QUANTITIES Now available in quantity at moderate prices. Explore the hydroxylamine salts. For samples and complete technical data, fill out coupon and mail today.

DISCOVER THE NITROPARAFFINS!

INDUSTRIAL CHEMICALS DEPARTMENT

COMMERCIAL SOLVENTS CORPORATION

260 MADISON AVENUE, NEW YORK 16, N. Y.

Please send me:
- ☐ Technical data on the Hydroxylamines
- ☐ Sample of Hydroxylammonium Chloride
- ☐ Sample of Hydroxylammonium Sulfate
- ☐ Sample of Hydroxylammonium Acid Sulfate

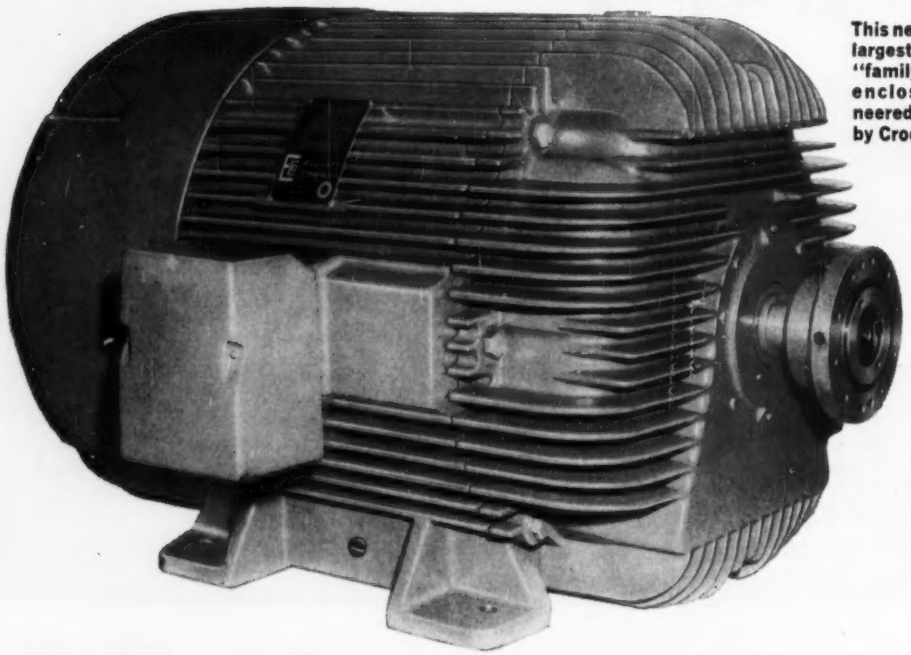
NAME..... TITLE.....

COMPANY.....

STREET.....

CITY..... ZONE..... STATE.....

BETTER COOLING MEANS LONGER LIFE LESS MAINTENANCE



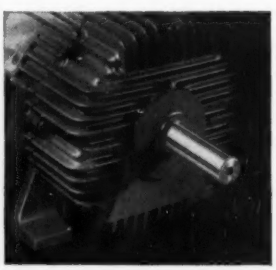
This new 300-hp unit is the largest of the Elliott C-W "family" of ribbed-frame enclosed motors, pioneered in the United States by Crocker-Wheeler.

ELLIOTT C-W SEALEDPOWER MOTORS

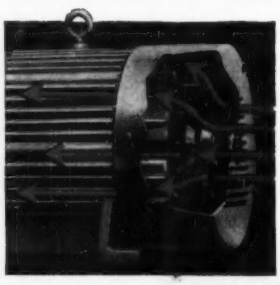
The numerous thin, deep ribs of Elliott C-W SEALEDPOWER Motors are the most advanced development of the ribbed construction, pioneered in the United States by Crocker-Wheeler. Modifications of SEALEDPOWER totally-enclosed fan-cooled motors include explosion-proof designs in all ratings up to 300 hp. Either open greasable or pre-lubricated bearings can be furnished.

Highly-effective sealing prevents entrance of moisture, dust, dirt, corrosive materials; consequently these motors can be depended upon for long, trouble-free service.

In numerous cases, SEALEDPOWER motors are proving to be more economical than standard open motors because of their low maintenance and dependability.



Extra fins keep bearing cool. This potential trouble spot is effectively cooled by the generous extra fins seen in the photograph above.



Cooling blast hugs frame. Air is directed along fins extending entire motor length. Easy to clean — no enclosed cooling passages to clog up.

ELLIOTT Company

CROCKER-WHEELER PLANT JEANNETTE, PA.

Newest data on modern enclosed motors—including explosion-proof—is given in Elliott Bulletin PB 6000-2. Send for free copy today.

Chemical Week

Wallace F. Traendly ..... Publisher
Sidney D. Kirkpatrick ..... Editorial Director

Howard C. E. Johnson ..... Editor-in-Chief

Ralph R. Schulz ..... Managing Editor
William Olcott ..... Assistant Managing Editor
J. Robert Warren ..... Assistant Managing Editor
Donald P. Burke ..... Associate Editor
Anthony J. Piombino ..... Associate Editor

DEPARTMENTS

Administration .... Cooper R. McCarthy, *editor;* Leo J. Northart
Business News ..... Homer Starr, *editor;* Robert L. Porter, Bruce Bendow
Engineering ..... Kenneth C. Wilsey, *editor;* Philip A. Untersee
Markets ..... Jorma Hyypia, *editor;* Philip A. Cavalier
Production ..... Herbert C. Short, *editor*
Reports ..... Vincent L. Marsilia, *editor*
Research ..... Joseph F. Kalina, *editor;* Sanford J. Durst
Sales ..... John M. Winton, *editor*
Specialties ..... Richard J. Callahan, *editor;* Mary Thompson
Copy .. William Mullinack, *editor;* Henry S. Gordon, John Philbin
Art .... R. D. S. Marshall, *director;* Richard P. Kluga, Dolores Able
Buyers' Guide ..... E. L. Sisley, *editor;* Betsy L. Emery

REGIONAL EDITORS

Far West Emil J. Mikity, San Francisco
Southwest ..... James A. Lee, Houston
Midwest .... T. Peter Forbath, Chicago

NATIONAL AND WORLD NEWS

Economics ..... Dexter M. Keezer
Manager, News Bureaus ..... John Wilhelm

Atlanta ..... B. E. Barnes
Chicago ..... Stewart Ramsey
Cleveland ..... William Meldrum
Dallas ..... Kemp Anderson, Jr.
Detroit ..... Donald MacDonald
Los Angeles ..... John H. Kearney
San Francisco ..... Margaret Ralston
Seattle ..... Ray Bloomberg
Washington ..... George B. Bryant, Jr.
Correspondents in 75 principal cities.

Beirut ..... O. M. Marashian
Bonn ..... Morrie Helitzer
Caracas ..... John Pearson
London ..... William J. Coughlin
Melbourne ..... Alicja Grobtuch
Mexico City ..... Peter Weaver
Moscow ..... Robert Gibson
Paris ..... Robert E. Farrell
Tokyo ..... Sol Sanders
Correspondents in 64 principal cities.

Robert S. Muller ..... Advertising Sales Manager

Business Department ..... Alvin J. Babkow, *manager*
Sales Promotion Department ..... Fred E. Lesner, *manager*
Market Service Manager ..... Margaret J. Swikart
Advertising Makeup ..... Robert L. Maier
Advertising Salesmen ..... See Adv. Index, p. 94

Paul W. Erb ..... Circulation Manager
Frances Regan ..... Reprints

MARCH 14, 1959 **Vol. 84, No. 11**

Chemical Week (including Chemical Specialties and Chemical Industries) is published weekly by McGraw-Hill Publishing Co., James H. McGraw (1860-1948), founder. EXECUTIVE, EDITORIAL, CIRCULATION and ADVERTISING OFFICES: McGRAW-HILL BUILDING, 330 West 42nd St., New York 36, N.Y. See panel below for directions regarding subscriptions or change of address. Donald C. McGraw, President; Joseph A. Gerardi, Executive Vice-President; L. Keith Goodrich, Vice-President and Treasurer; John J. Cooke, Secretary; Nelson Bond, President, Publications Division; Harry L. Waddell, Senior Vice-President; Ralph B. Smith, Vice-President and Editorial Director; Joseph H. Allen, Vice-President and Director of Advertising Sales; A. R. Venezian, Vice-President and Circulation Coordinator.

Subscriptions to Chemical Week are solicited from management men in the Chemical Process Industries in administration, production and plant operation, design and construction, research and development, sales and purchasing. Position, company connection and nature of company's business, products and approximate number of employees must be indicated on subscription application. Send to address shown in panel below.

United States and United States possessions subscription rate for individuals in the field of the publication, $3 per year; single copies, 35¢. Foreign subscription rates per year: Canada, $4; other Western Hemisphere, countries, $15; all others, $25, payable in advance. Printed in U.S.A. Title registered in U.S. Patent Office.

© Copyright 1959 by McGraw-Hill Publishing Co., Inc. All rights reserved. **Unconditional Guarantee:** the publisher, upon direct request from any subscriber to our New York office, agrees to refund the part of the subscription price applying to copies not yet mailed.

Send subscription correspondence and change of address to Fulfillment Manager, Chemical Week, 330 West 42nd St., New York 36, N. Y. Subscribers should notify Fulfillment Manager promptly of any change of address, giving old as well as new address, and including postal zone number, if any. If possible, enclose an address label from recent issue of Chemical Week. Please allow one month for change to become effective.

THE BUSINESS MAGAZINE OF THE CHEMICAL PROCESS INDUSTRIES

VIEWPOINT

A SHORTER WORK WEEK as the means to solve the current unemployment situation got the expected approval from leaders of the AFL-CIO. It was pretty routine. While CHEMICAL WEEK has outlined its views on this (*see Viewpoint, Feb. 21, p. 22*), there are some sidelights worth noting. Two excerpts from a news report on the meeting:

• "Labor leaders acknowledge that some of the opposition to a cut in hours will come from union members. For instance, O. A. Knight, president of the Oil, Chemical & Atomic Workers, says that since 'an eight-hour day isn't any physical hardship,' it's often hard to 'get the union membership behind you' for a cut in hours. 'We've got to show him that his job is threatened,' Knight said."

• "Union strategists are facing another problem—the tendency of workers employed below their physical capacity to engage in 'moonlighting'—to work at a second job. Many rubber workers in Akron are doing this now . . . Union efforts to break this practice—which keeps men [who have no work at all] out of jobs—have been generally futile."

Meanwhile, union publications are also discussing employment. We quote from the Feb. '59 *International Chemical Worker:*

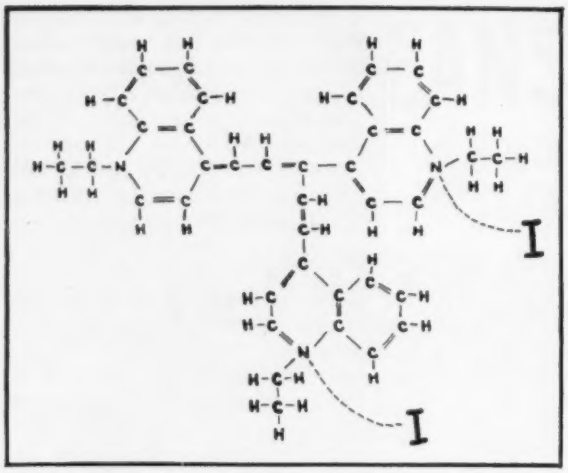
• "Although the effects of recession are wearing off, as far as *production* in the chemical industry is concerned, there has been no matching increase in *employment*. By all accounts, the companies are introducing new automation processes as never before, and many prerecession jobs have simply vanished . . .

"These developments threaten to create a financial situation wherein the ICWU would not be able to operate effectively although the industry might be booming and expanding. Therefore, the executive board approved the immediate drafting of an international-wide plan to replace and offset this loss of revenue."

H. C. Johnson

Editor-in-Chief

...AMONG SOME 3700 ORGANICS



Something old

Look—with the eye of a quantum mechanic—at this marvelous little molecular resonating machine. For the trifling sum of $16.65 we can supply 400 quintillion of these machines. They will weigh ½ gram, all told, and will come in a small bottle labeled *Neocyanine* (Eastman 2067).

The two iodines come separately packed in the crystal lattice as ions. The points where they were detached, at the quaternary nitrogens, are positively charged, of course. Either of these two positive charges can be sent skittering back and forth through the branched chain of conjugated carbon atoms to bounce off the third nitrogen atom. All it takes to set the machine resonating thus is a photon of light or infrared that carries the difference in energy between quiescence of the positive charges and resonance thereof.

This little resonator has proved useful for trapping photons and transferring their energy to silver halide crystals. The silver halide thereupon responds photographically to wavelengths it would otherwise miss.

This is a 1925 model. We have since devised thousands of more advanced models of this basic type of resonator, but stock only the above and five other simple ones for off-the-shelf delivery: *Cryptocyanine* (Eastman 1334), *Dicyanine A* (Eastman 1532), *Pinacyanole* (Eastman 622), *Pinaflavole* (Eastman 1842), and *Orthochrome T* (Eastman 623). As dyes they are exceedingly powerful.

For a discussion of the working parts from which such ultra-subminiaturized electronic machines can be built by the skillful worker, see a paper entitled "A Century of Progress in the Synthesis of Dyes for Photography." As long as our supply of reprints lasts, we can send you a copy free.

The cyanine dyes possess interest not only in applied physics but in biology as well. Many of them have strong and useful antifilarial, anthelmintic, and bacteriostatic activity. That the inhibition of *E. coli* by one of them has been found reversible by crude yeast and liver extract fascinates us.

Something new

There was this pair of Brazilians, and they had an idea. They knew that chloranilic acid (which we sell as *2,5-Dichloro-3,6-dihydroxy-p-benzoquinone*, Eastman 4539) has a vivid reddish-purple ion. But its silver salt is colorless and not very soluble. Silver chloranilate, however, is not nearly so insoluble as silver chloride.

This is where the Brazilians got their idea. Add silver chloranilate to a solution containing chloride ions, and the latter will steal all the silver. Releasing free chloranilate ions! Which are reddish-purple! And easy to measure colorimetrically!

Being proper scientists, the Brazilians published their idea. A fad started. Other analytical chemists took to preparing other chloranilate salts with which to work the Brazilian trick on other hard-to-measure colorless ions. Convenience, sensitivity, and less interference resulted.

When the clan gathered at last year's Pittsburgh Conference, conversations on the chloranilate method were easy to start. In the interests of barium chloranilate (Eastman 7508, for sulfate) and mercury chloranilate (Eastman 7504, for chloride), we had an animated one going at our booth. Someone mentioned fluoride ion. All present agreed that for fluoride you'd want strontium chloranilate—all except one chap. Everybody knows, he maintained, that for immobilizing fluoride ions the rare earth lanthanum is tops. At having overlooked such an apparently obvious fact of nature, we were forced to conceal our embarrassment. In our fluster we failed to note the name on his badge before losing sight of him in the crowd.

This account explains the circumstances of our entry into the field of rare earth organic compounds with the offering of *2,5-Dichloro-3,6-dihydroxy-p-benzoquinone Lanthanum Salt* as Eastman 7629 at $2 for 5 grams. An abstract describing its use in fluoride determination is at present *not* available (repeat *not*). Somebody has to write and publish before we can abstract.

Something borrowed, something blue
(and, under other circumstances, red)

Also very big this season is chelatometry. Indicators are needed to show by color change when a given cation has been completely chelated. In *Pyrogallolsulfonephthalein* (Eastman 7657, "Pyrogallol Red") we offer one such for Bi, Ni, Co, and Pb.

This compound came out of Cornell in 1925 (the same year we were busy with *Neocyanine*). In that gay time the Cornellians found that NaOH or Na_2CO_3 dissolved their compound very readily, producing a deep red in very dilute solutions of the alkalis and a very deep blue in stronger solutions. In very dilute aqueous ammonia they obtained a red color, changing to purple as the ammonia concentration increased. They also worked out a table of color changes with P_H (as it was then written).

In 1955, Pyrogallol Red was seized upon by the avid chelatometrists of Karlova University in Prague, where the color is fashionable. We can send you an abstract of what the change in academic atmosphere has done for the compound borrowed from far above Cayuga's waters.

Something else? We have 3700 other Eastman Organic Chemicals stocked and ready to go. You find them catalogued in our List No. 41. If you don't have a copy, write *Distillation Products Industries*, Eastman Organic Chemicals Department, Rochester 3, N. Y.

DPi

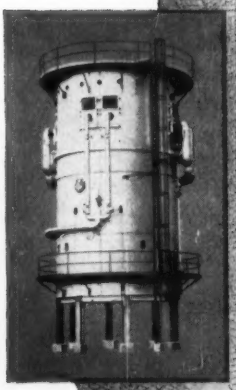
Eastman Organic Chemicals

Also . . . vitamins A and E in bulk . . . distilled monoglycerides

Distillation Products Industries *is a division of* **Eastman Kodak Company**

HYDROGEN FROM NATURAL GAS

for producing AMMONIA and METHANOL



Since its introduction ten years ago, the Chemico *gas reform furnace* has often proved the most efficient and economical first step in the production of ammonia, methanol and high purity hydrogen from natural gas. The unique design of the Chemico *gas reform furnace* eliminates thermal expansion problems, assures easy control during operation and requires minimum maintenance.

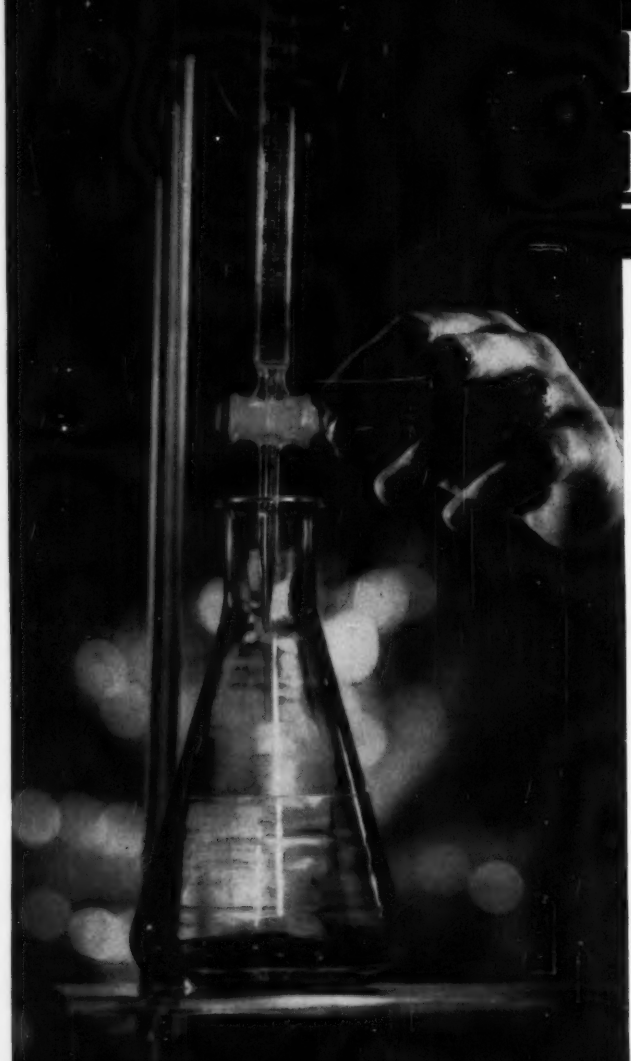
Now there are more than 60 furnaces in operation, and another 10 are in the design or construction stage. These units range in capacity from 50,000 to 8,000,000 standard cubic feet per day of hydrogen plus carbon monoxide. For any process which requires hydrogen, the Chemico *gas reform furnace* may well prove the most economical means of obtaining the necessary quantities. Write to Chemico for further information.

WRITE TODAY FOR A COPY OF THE NEW CHEMICO GENERAL BULLETIN

CHEMICAL CONSTRUCTION CORPORATION
525 West 43rd Street, New York 36, New York

CHEMICO

CHICAGO • DALLAS • HOUSTON • PORTLAND, ORE. • TORONTO • LONDON • PARIS • JOHANNESBURG • TOKYO



At El Dorado

PURITY IS FOREMOST

IF YOU use coconut oil fatty acids or methyl esters in your formulations, Foremost-El Dorado's standards of purity and uniformity can give you a better end product—and less trouble. That's because, at El Dorado, Purity *is* Foremost . . . and has been for over 65 years.

EXAMPLE: Eldo Myristic acid is consistently over 95% pure—the purest commercially produced.

Write or phone today for samples and specifications. Department **C-1**

FATTY ACIDS

Caprylic Capric Lauric
Myristic Palmitic
Cocoleic Eldhyco* Coconut

METHYL ESTERS

Caproate Caprylate Caprate
Laurate Myristate Palmitate
Oleate Eldo* 18 Coconate

*T. M. REG.

FOREMOST FOOD AND CHEMICAL COMPANY
EL DORADO Division
P. O. Box 599, Oakland 4, California

Atlanta: Geo. E. Missbach & Co.
Boston: N. S. Wilson & Sons
Chicago: M. B. Sweet Company
Cincinnati: Howard Dock
Cleveland: F. W. Kamin Company
Detroit: Harry Holland & Son, Inc.
Houston: Joe Coulson Company
Kansas City: Vulcan Sales Company
Minneapolis: M. H. Baker Company
New Orleans: Breffeilh & Sheahan Company
New York: H. Reisman Company
Oakland: Foremost Food & Chemical Co.
Oklahoma City: Rullman Brothers
St. Louis: Harry A. Baumstark & Company

60 GRADES AND GRINDS MEET EVERY SULFUR NEED

PROCESSED CRUDE SULFURS

All grades 99.5% pure in sizes from 325-mesh to mixed fines and lumps.

REFINED INDUSTRIAL SULFURS

Grades range in fineness from 200-mesh through cones, sticks, lumps, solid barrels, all 99.85% minimum pure.

DISPERSED SULFUR

An aqueous dispersion, 68% sulfur, of particles averaging less than 2 microns in diameter.

RUBBERMAKERS' SULFURS

Specially formulated and standardized for tires, tubes and rubber specialties. Pure sulfur content from 68% (dispersed) to 99.8%. Sizes from 80- to 325-mesh.

CRYSTEX® INSOLUBLE SULFUR

Stauffer's insoluble sulfur, "Crystex", is a thermoplastic high polymer with a molecular weight in the order of hundreds of thousands. At least 85% of this material is insoluble in uncured rubber . . . does not migrate . . . eliminates "bloom".

AGRICULTURAL SULFURS

Among many grades are Dusting, Wettable, Dip and Coarse sulfurs for a wide variety of agricultural and livestock uses.

Stauffer is the country's largest user of sulfur and largest marketer of processed sulfurs.

Send for "The Newest Book on the Oldest Chemical". This 52-page book is not only a catalog of Stauffer Sulfurs but an authoritative treatise on Sulfur with many illustrations and useful tables.

STAUFFER CHEMICAL COMPANY

380 Madison Avenue, New York 17, N. Y.
Prudential Plaza, Chicago 1, Illinois
636 California Street, San Francisco 8, California
P. O. Box 9716, Houston 15, Texas

Stauffer CHEMICALS SINCE 1885

MR. SOLVENT BUYER:

ESPESOL OFFERS BIG SAVINGS WITH *ONE SOURCE* SUPPLY!

- Toluene
- Xylene
- Other Aromatic Solvents
- V M & P Naphtha
- Mineral Spirits
- Other Aliphatic Solvents

Save on Freight Costs
Smaller, multi-product orders are shipped in compartment lots by tank car, transport truck, barge, and ship and enjoy bulk rates.

Reduce Inventory Costs
Less capital tied up in inventory because stock on hand is kept to minimum. Losses from evaporation and other causes greatly reduced. Fresh stock insured at all times.

Immediate Availability
Eastern States' conveniently located terminals insures quick delivery to all points.

"Package" Delivery Ideal for Small Buyers
Combining small lots into one shipment reduces purchasing agent's work, simplifies unloading and handling, and insures all products arriving at one time to minimizing production delays.

ESPECO

Complete stocks are available for super-fast delivery from Eastern States' strategically located terminals —by truck, tank car, barge and drum.

Eastern States Petroleum & Chemical Corporation

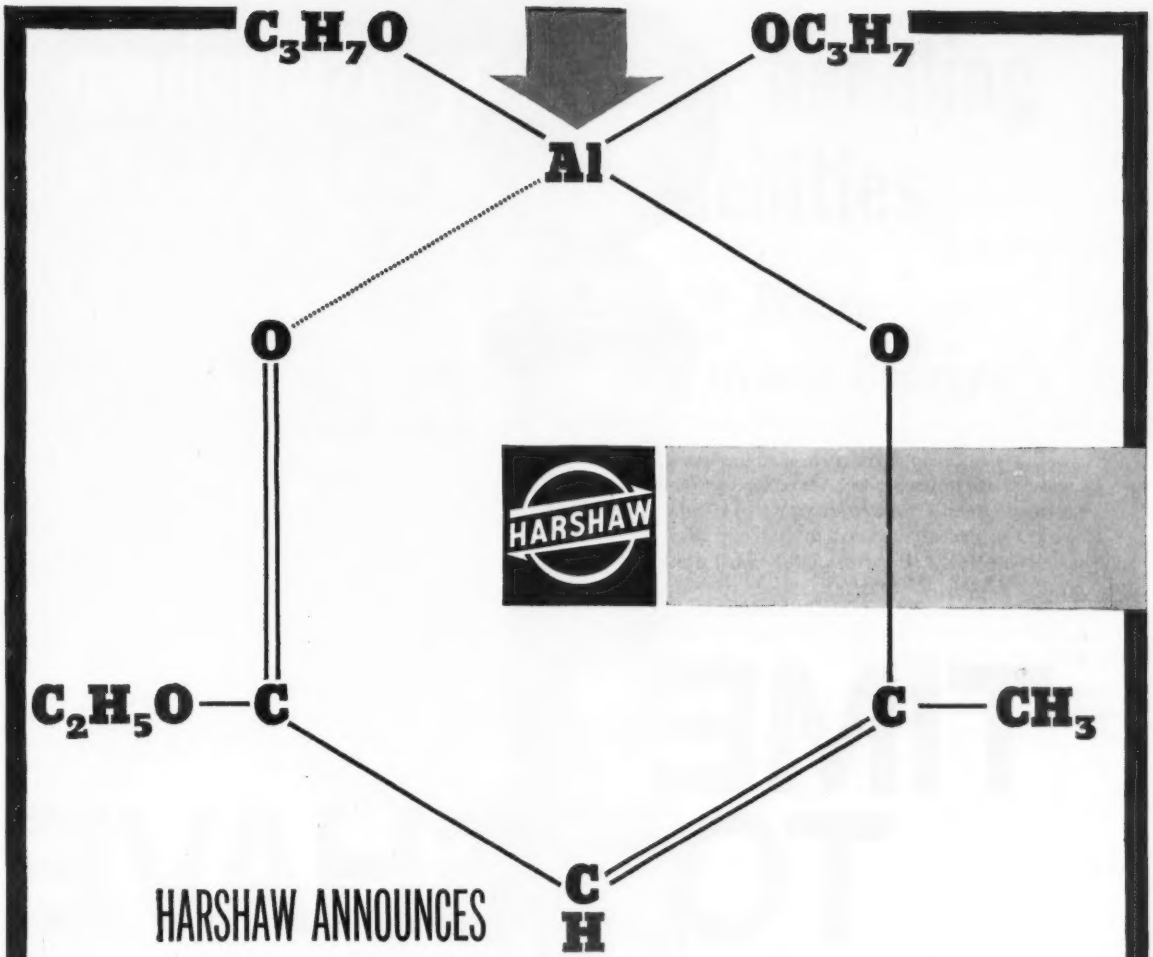
Eastern States Petroleum and Chemical Corporation
P. O. Box 5008
Houston 12, Texas

Please send additional information on Espesol's ONE SOURCE supply! CW 3-1459

Name_____
Title_____
Company_____
Address_____
City_____ Zone____ State____

For further information, return coupon or call office nearest you.

Houston, WA 3-1651
New York, CI 7-2520
Chicago, VI 8-5410
Cleveland, ED 3-0188
Louisville, JU 3-7634
Atlanta, CE 3-3227
Los Angeles, RY 1-0278



HARSHAW ANNOUNCES

aluminum chelate PEA-1

A NEW VERSATILE CHEMICAL WITH GREAT PROMISE

Uses already established for HARSHAW ALUMINUM CHELATE ARE:

1. Crosslinking Agent
2. Hydrophobic Intermediate
3. Drying Oil Modifying Agent
4. Adhesion Promoter

PROPERTIES

Formula Weight	274-29
Color	1-2 (Gardner Scale)
Viscosity	W-X (Gardner Scale)
Specific Gravity	1.035 @ 25°C
Weight Per Gallon	8.6

The Harshaw Chemical Co. is the first commercial producer of Aluminum Chelate in the United States.

We have prepared a Technical Data Sheet which describes the characteristics of Harshaw Aluminum Chelate PEA-1, and also discusses suggested applications. A copy of this can be obtained by contacting the New Products Department, The Harshaw Chemical Company, Cleveland 6, Ohio.

THE HARSHAW CHEMICAL CO.
1945 East 97th Street • Cleveland 6, Ohio
Chicago • Cincinnati • Cleveland • Detroit • Houston • Los Angeles • Philadelphia • Pittsburgh • Hastings-On-Hudson

TIME TO SHAVE your soda ash costs

EVERY $6,400 YOU SAVE IN PROCESSING OR MANUFACTURING IS WORTH A $100,000 ORDER

This is a startling fact that calls for careful heeding by every businessman.

Pretax earnings average 6.4% or $6,400 on each $100,000 of product you sell, after raw materials, sales expenses, overhead and miscellaneous are deducted.*

This same net on a $100,000 order is yours every time you save $6,400 in processing or manufacturing costs.

A re-evaluation of your soda ash purchases may reveal appreciable savings.

Here are a few factors to consider:

(1) Columbia-Southern may develop, through a study of your operations, potential savings in your converting from bag to bulk purchases.

(2) Savings also may become apparent in a study of Columbia-Southern's three Soda Ash plant locations, selected for maximum delivery efforts.

(3) Further possibilities may exist through the kind of help Columbia-Southern can give you in specialized technical assistance and in recommendations for profitable handling and storage procedures.

If you haven't carefully appraised your soda ash purchases within the past few years, we suggest that you call today at any of the fourteen Columbia-Southern District Sales Offices for prompt and helpful information.

*Based on Manufacturing Corporation Statistics for first half of 1958.

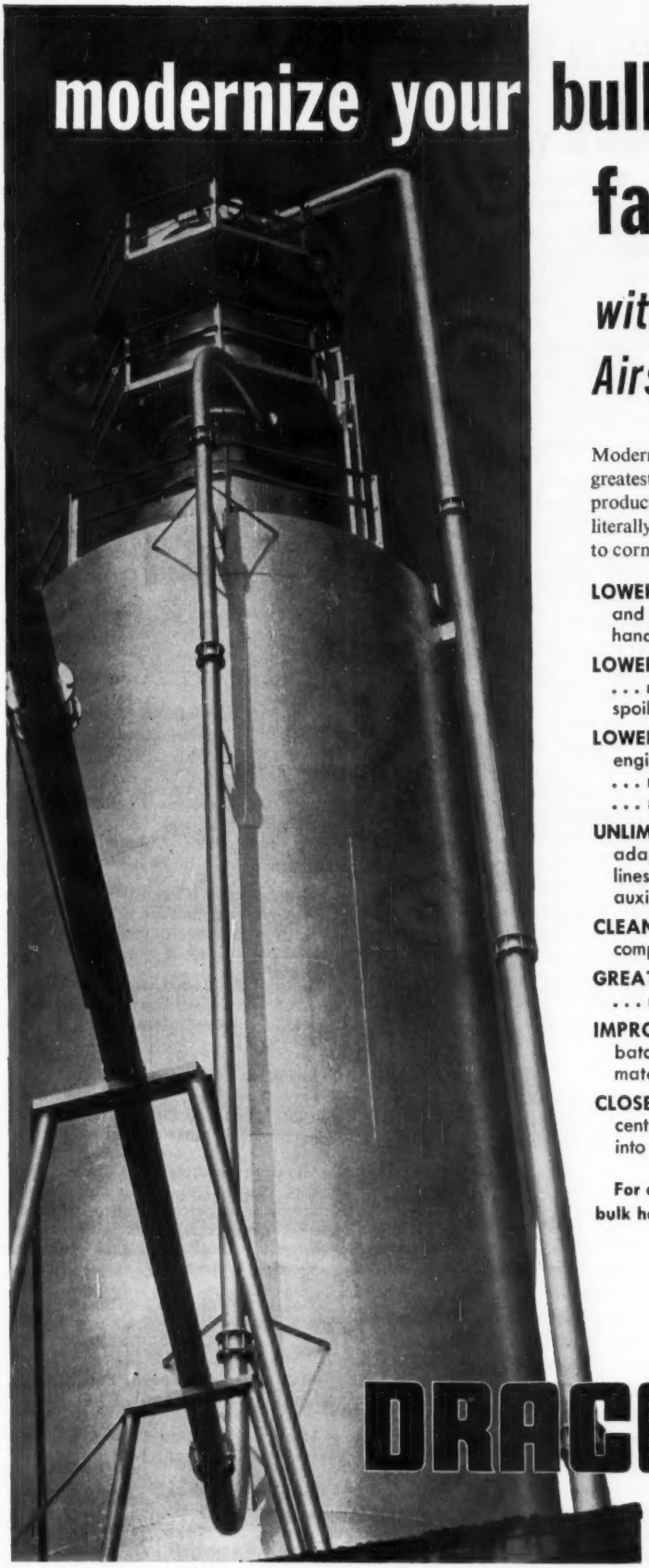
COLUMBIA-SOUTHERN CHEMICAL CORPORATION

A Subsidiary of Pittsburgh Plate Glass Company • One Gateway Center, Pittsburgh 22, Pennsylvania

DISTRICT OFFICES Cincinnati, Charlotte, Chicago, Cleveland, Boston, New York, St. Louis, Minneapolis, New Orleans, Dallas, Houston, Pittsburgh, Philadelphia, San Francisco IN CANADA Standard Chemical Limited

modernize your bulk handling facilities

with Dracco Airstream Conveyors



Modernized bulk materials handling offers the greatest potential for cost reduction and increased productivity. Dracco Airstream Conveyors handle literally hundreds of dry, bulk materials—from coal to corn flakes—and provide these cost-saving benefits:

LOWER LABOR COSTS with automatic operation and one-man supervision . . . no costly manual handling . . . no extra or unnecessary handling steps.

LOWER MATERIAL COSTS through bulk purchasing . . . no loss from spillage or broken bags . . . no spoilage from moisture or contamination.

LOWER MAINTENANCE COSTS through sound engineering, simple design and rugged construction . . . minimum repair and lubrication requirements . . . reliable long-term operation.

UNLIMITED FLEXIBILITY since space-saving systems adapt to new or existing plants . . . conveying lines can be located anywhere . . . no costly auxiliary handling methods needed.

CLEANER PLANTS since Airstream Systems are completely enclosed and dust-free.

GREATER SAFETY with no hazardous moving parts . . . no workmen exposed to toxic materials.

IMPROVED PRODUCT QUALITY from accurate batching and weighing . . . no intermixing of materials . . . no contaminating dusts.

CLOSE INTEGRATION WITH PRODUCTION with centralized, automatic control . . . processes tied into one coordinated operation with no waste motion.

For expert consultation on the modern answer to your bulk handling problem, call in a Dracco engineer today.

DRACCO DIVISION OF FULLER CO.
4080 East 116th Street • Cleveland 5, Ohio

DRACCO *airstream* conveyors
dust control equipment
(Pronounced Dray'-co)

a tip to
PHOSPHATE BUYERS
who also use

SODIUM SILICO-FLUORIDE

...you can include SSF with Blockson phosphates in your

MIXED CAR ORDERS

SSF does these jobs well

Blockson SSF is widely used for water fluoridation, laundry sours, foam rubber production and as an opacifier in glass manufacturing. A dozen other interesting uses are listed in our Technical Bulletin which is yours for the asking. Blockson SSF is a free flowing non hygroscopic crystalline powder, 99% Na_2SiF_6. Write Blockson or your Blockson distributor for the bulletin and prices.

P.S. Blockson is the largest manufacturer of SSF . . . A dependable source.

OLIN MATHIESON CHEMICAL CORPORATION
BLOCKSON

BLOCKSON CHEMICAL COMPANY
JOLIET, ILLINOIS
Division of Olin Mathieson Chemical Corporation

OPINION

Cheaper in Tanks

TO THE EDITOR: [Re] the new price for 2-vinylpyridine, you quoted (*CW Market Newsletter, Jan. 31*) the tank-truck price incorrectly. The correct price is $1.15/lb. in tank trucks [*rather than $1.157*—ED.] . . . .

HARRY E. WHITMORE
Manager, Chemical Sales Division
Reilly Tar & Chemical Corp.
Indianapolis

Sulfosuccinate Prices

TO THE EDITOR: In *CW*'s Technology Newsletter (Nov. 29, '58), you disclose that there will soon be new competition for the sulfosuccinates. The article also refers to a product called Pronon 505 produced by Process Chemicals Co. (Los Nietos, Calif.) that will sell for 35¢ per pound. This, you report, is about one-third the price of dioctyl sodium sulfosuccinate.

If we can assume that Pronon 505 is a 100%-active surface-active agent, your statement would have been correct a year ago, but it certainly isn't today. About midyear '58, American Cyanamid reduced the price of Aerosol OT (75% active) from 62¢ to 35¢ per pound in tank wagons. On a 100%-active basis, this works out to 50¢ per pound, not $1 per pound as clearly implied by your article. . . .

I know that you can appreciate the effect of such a statement on our customers and our prospective customers.

R. L. LAMBERT
Eastern Regional Manager
Process Chemicals Dept.
American Cyanamid Co.
New York

Cyanamid, the first producer of sulfosuccinates, manufactures a product against which any new nonionic wetting agent must stand comparison —both in price and in efficacy. We regret the implication that sulfosuccinates currently sell for $1/lb. on a 100%-active basis.—ED.

Wrong Branch

TO THE EDITOR: In announcing the expansion of Puget Sound Pulp and Timber Co. (*CW, Jan. 31, p. 25*), you listed Bowen Engineering Co. of Long Branch, N.J., as fabricator of the 100,000-lbs./day spray dryer, the largest of its kind in the U.S. . . .

The company name is Bowen Engineering Inc., and the address is North Branch, N.J.

RAY WATERS
Director of Publicity
F. P. Walther Jr. & Associates, Inc.
New York

Sodium's Future

TO THE EDITOR: [Re] "Sodium Pins Large Hopes on the Long Pull" (*CW, Jan. 24, p. 76*), you and your staff are to be commended for this excellent article.

M. FAYE
Products Manager
U. S. Industrial Chemicals Co.
New York

MEETINGS

American Institute of Chemical Engineers, 39th national meeting, Haddon Hall Hotel, Atlantic City, N.J., March 15-18.

Assn. of Corrosion Engineers, 1959 Corrosion Show and 15th annual national conference, Sherman Hotel, Chicago, March 16-20.

Manufacturing Chemists' Assn., conference on water and air pollution abatement, Netherlands Hilton Hotel, Cincinnati, O., March 18-19.

Society of Plastics Industry, Pacific Coast Section, 16th annual conference, Hotel del Coronado, San Diego, Calif., March 25-27.

Packaging Institute, conferences on the recent food additives amendment to the U.S. Food and Drug Act.; Chicago, March 26; Los Angeles, April 6.

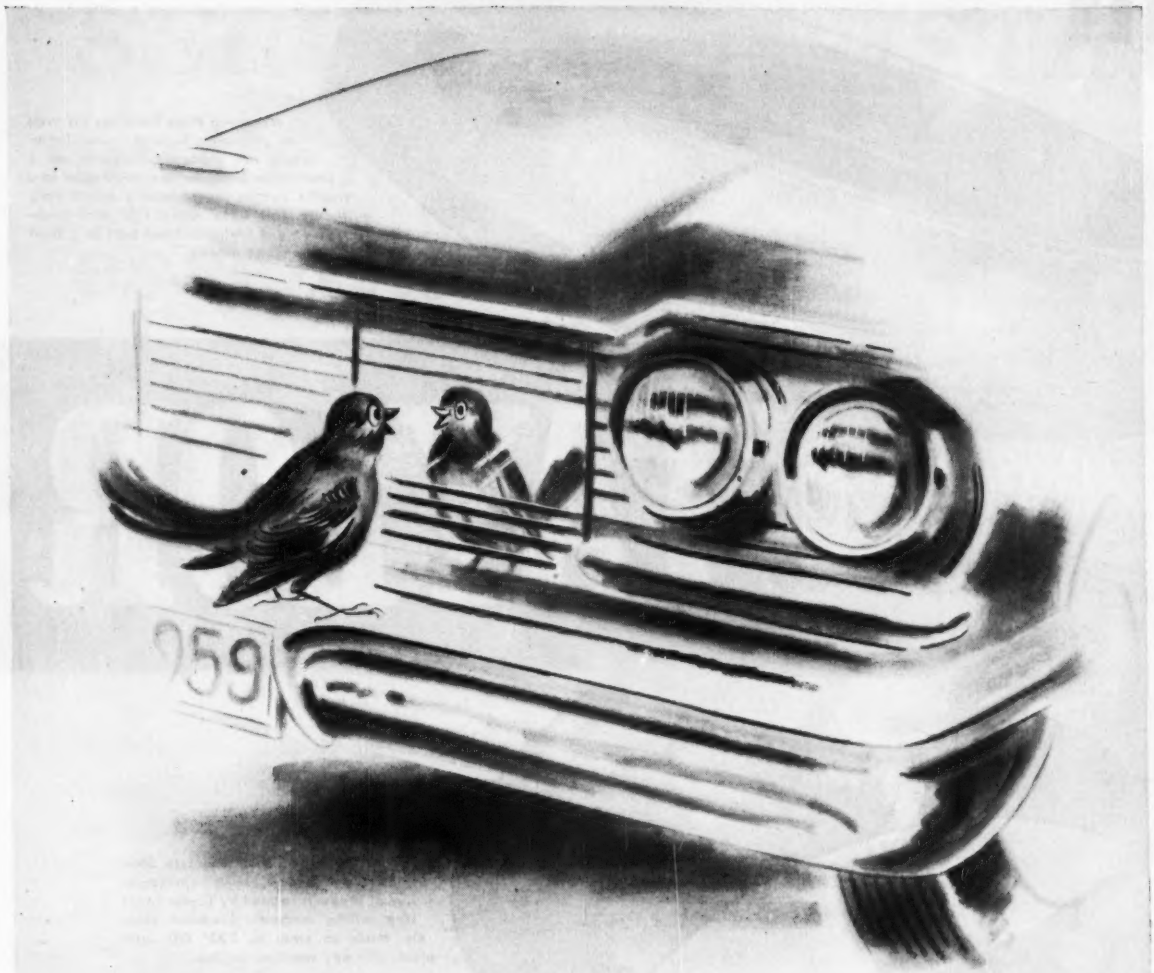
American Institute of Chemical Engineers, Philadelphia-Wilmington section; theme: new advances in chemical engineering practice; University Museum, University of Pennsylvania campus, Philadelphia, March 31.

Chemurgic Council, 24th annual conference, Congress Hotel, Chicago, April 1-3.

Fifth Nuclear Congress, Public Auditorium, Cleveland, April 5-10.

American Chemical Society, national meeting, Boston, April 5-10.

Chemical Institute of Canada, Analytical Chemistry Division, eighth regional conference, symposium on instrumental methods of analysis, Guildwood Inn, Sarnia, Ont., Canada, April 6-7.



New face in town—bright aluminum

The shining new look of "bright dip" aluminum is being seen more and more on today's automobiles. Radiator grilles, body trim, dashboards and door strips are formed from rust-proof-forever aluminum and then "bright dipped" (chemically polished) and anodized to a brilliant lifetime finish. Most important to auto makers—"bright dipping" has made it practical to use easier-formed aluminum in place of steel for trim.

Of course, this new super polishing method is not confined to the auto industry. It is being used on an increasingly wider variety of aluminum products—from trash cans to jewelry... from building materials to zippers. The important chemical in chemical polishing is phosphoric acid. In a "bright dip" solution, phosphoric acid polishes aluminum—and copper, brass and stainless steel—more perfectly and efficiently than is possible with other methods. It does the job by dissolving the high points of the metal's surface faster than its valleys. This, in effect, smoothes or polishes the metal—in minutes!

V-C phosphoric acid, like all V-C phosphate chemicals, reaches customers at peak quality and purity. That's because of V-C's integrated operational control—from mining its own phosphate rock . . . on through production to non-contaminated delivery in its own V-C trucks. For full information on V-C phosphate chemicals in terms of your product or service, see your V-C distributor, or write direct to:

Virginia-Carolina Chemical Corporation • Chemicals Division
401 East Main Street, Richmond 8, Virginia • Phone: Milton 8-0113

FOR PROFITS AND PROGRESS... SEE V-C®

T F

Precision Press Forgings (as well as Hammer Forgings and Extrusions) are made in quantity on a production basis as missile, rocket and engine components, heavy machinery parts, etc. This 64¾" OD x 1½" wall thickness press-forged stainless steel part is a Heat Sink for a long range missile.

TAYLOR

This 42" OD x 16" long Stainless Steel Jet Engine Turbine Case is representative of products formed by Taylor Forge ring rolling methods. Seamless rings are made in sizes to 120" OD with practically any required section.

Forged Headers with contoured outlets, made with any required outlet arrangement, are widely used for valve settings, gas compressor station manifolds, scraper traps, refinery charge heater headers, and many other applications in gas, oil and process piping. They are also made in heavy wall thicknesses for high pressure-temperature central power station service.

Electric Fusion Welded Pipe is made in sizes from 14" OD to 96" OD with wall thicknesses to 1.531", and in a variety of materials (including stainless and alloy steels). This pipe offers many opportunities for substantial economies, particularly in high pressure-temperature services and also in pipeline river crossings and other applications involving special design requirements. Pipe pictured is 16" OD x 1" wall thickness and is stainless steel.

SERVING INDUSTRY with many essential products

FORGE

Traditionally Dependable

Perhaps you think of Taylor Forge only as a maker of highest quality Welding Fittings and Forged Flanges—and certainly they are most important lines with us. But Taylor Forge is also an outstanding producer of many other less widely known though equally essential products.

The few examples pictured here are representative of the many diverse parts made by Taylor Forge to serve American Industry. One thing they have in common is the dependability, the integrity, that has always been associated with the name TAYLOR FORGE.

Taylor Forge & Pipe Works

General Offices and Works: P. O. Box 485, Chicago 90, Illinois
Plants at: Carnegie, Pa., Gary, Ind., Houston, Texas, Fontana, Calif., Hamilton, Ont., Canada
District Sales Offices: New York, Boston, Philadelphia, Pittsburgh, Atlanta, Chicago, Houston, Tulsa, Los Angeles, San Francisco, Seattle, Toronto, Calgary, Montreal.

Taylor Forge was America's first and is still the foremost manufacturer of Welding Necks, Nozzles, Large Diameter Flanges and similar boiler, heat exchanger and other pressure vessel components. Such parts are made in any size and material for any service condition.

Spiral-Weld Pipe, our original product, (first made as spiral riveted pipe nearly 60 years ago), remains to this day a major item and its use continues to expand. Its money saving features are widely recognized in services such as gas gathering lines; gas, oil and water well casing; irrigation pipe; water piping in sand, gravel and mining operations; and in fact, wherever the use of light weight pipe is indicated. It is also widely used as pipe piling.

AMERICA'S MOST COMPLETE LINE OF

SURFACTANTS

The Exactly Right Synthetic Detergent Raw Material
At The Right Price For Your Formulation

LIQUID DISHWASHING DETERGENTS

STEPAN DS-60
Desalted sodium alkyl aryl sulfonate

NINOL AA62
Lauric diethanolamide foam stabilizer

NINOL AA62 EXTRA, STEPAN P-650
High activity foam stabilizers and detergency boosters

STEPANOL B-153
Ammonium alkyl phenoxy polyoxyethylene sulfate

STEPAN LD-55A, RB-98, NINEX 26
Formulated dishwashing detergents for retail and industrial use

MAKON 10
Nonyl phenoxy polyoxyethylene ethanol

SYNTHETIC FLOOR CLEANERS

NINOL 1281, STEPAN ADT, STEPAN LC
Heavy duty coconut alkylolamides for viscous, nonrusting cleaners

NINEX 303, STEPANATE X & T
Sodium xylene and toluene sulfonate coupling agents

CAR WASHING COMPOUNDS

STEPAN RB-98, NINEX 26
Formulated concentrates, ready for dilution and sale

WAX STRIPPERS, WHITE WALL CLEANERS

STEPAN HDA-7, NINEX 24
Alkali soluble synthetic detergents

DEGREASERS

NINATE 411
Oil soluble alkyl aryl sulfonate emulsifier

MAKON BXA, BXK
Oil soluble, low cost non-ionics

COSMETICS

STEPANOL WA, WAT, AM, MG
Lauryl alcohol sulfate shampoo bases

STEPAN T-6-B, NINOL AA62, NINOL 128 EXTRA
Alkylolamide thickeners

NINOL CB60, NINOX ESO
Opacifiers for liquid cream shampoos

LAUNDRY DETERGENTS, LIQUID

STEPAN DT-20
Potassium alkyl aryl sulfonate plus coupler

RUG SHAMPOOS

STEPANOL T-28
Modified lauryl sulfate—foam stabilized

WATERLESS HAND CLEANERS

EMULSIFIER WHC
For formulating rinsable hand cleaner gels

INSECTICIDE EMULSIFIERS

TOXIMUL 500, TOXIMUL 600
All Purpose Emulsifiers

TOXIMUL A & B
New low cost emulsifier pair for chlorinated insecticides

TOXIMUL 102 & 103
Emulsifier pair for insecticides and herbicides

SPECIAL EMULSIFIERS FOR PHOSPHATE INSECTICIDES

SALES • SERVICE • WAREHOUSE STOCKS

Warehouse stocks are carried in:
Jersey City • Philadelphia • Chicago
Atlanta • St. Louis • Dallas • Los Angeles
San Francisco • Portland

In Canada: Charles Tennant & Co. (Canada) Ltd. • Montreal • Toronto • Vancouver

Export: Agents in principal cities throughout the world

LABORATORY ASSISTANCE

The Stepan Chemical Company has complete laboratory facilities to assist you in every way possible toward developing the product most suitable to your needs.
Our technical staff will be pleased to consult with you on new products as well as new applications of our present products.

SEND COUPON FOR BULLETIN—SAMPLES—PRICES

STEPAN CHEMICAL COMPANY CW-3B
427 W. Randolph Street, Chicago 6, Illinois
Gentlemen:
Please send me complete information, and samples of.....

.....

Name .....

Firm .....

Street .....

City..... Zone..... State .....

STEPAN
CHEMICAL COMPANY
NINOL

STEPAN CHEMICAL COMPANY
427 W. Randolph Street, Chicago 6, Illinois
Telephone: STate 2-4711

Business
Newsletter

CHEMICAL WEEK
March 14, 1959

Plans for large-scale output and commercial use of polyisoprene —the man-made equivalent of natural rubber—were revealed this week by Shell Chemical and U.S. Rubber.

U.S. Rubber says it is now making polyisoprene tires at its Los Angeles plant in the popular 7.50-20 size, and that it will expand production to additional truck tire sizes, off-the-road tires, aircraft tires, white sidewalls for passenger vehicles, and the like.

Shell will make the polyisoprene at its chemical complex at nearby Torrance. Shell's selling price: 30¢/lb., identical with current price quotes for the natural product.

Initially, say Shell officials, production will average 5 tons/day, to supply U.S. Rubber's needs and for customer evaluation samples. But planned additions this year will boost the plant's capacity to 15,000-20,000 tons/year.

•

Another rubber company also has expansion plans. Seiberling Rubber (Akron, O.) says construction is already under way on a 20,000-sq.ft. addition to the company's plastics division plant in Newcomerstown, O. It's slated for completion this spring. President J. P. Seiberling said, "We will expand production of our present lines and add new products. Our goal is to double the plastics division sales within the next three years."

The division's current product line includes various types of vinyls, styrene, ABS polymer, polyethylene and polypropylene.

•

Also expanding: Pittsburgh Coke & Chemical Co.'s Activated Carbon Division. Construction of a new addition to the plant—to be started shortly and to be completed later this year—will bring the company's activated carbon capacity to more than double '57's rating.

•

Highlights from the week's financial reports:

Atlas Powder—which had issued preliminary figures Feb. 3—says its '58 sales and operating revenues declined 8.5% to $65.6 million; net earnings were down 32%, to $2.9 million.

Pennsalt Chemicals' '58 sales were down 1.5%, to $78.6 million; but subtract sales of the I. P. Thomas fertilizer division—which was sold last March—and '58 volume comes out 1.8% higher. And net earnings were up 19.8%, to $3.7 million.

Pittcoke's fortunes suffered because of the recession's effect on the heavy industries that consume such products as coke and pig iron. Sales were off 15.9%, to $45.5 million; earnings dropped 52.8%, to $1.3 million.

A U.S.-backed petrochemical boom is on in Argentina despite that country's shaky economic outlook. On tap:

- A $17-million ethylene and polyethylene plant.
- A $7.5-million styrene monomer plant.
- A $40-million complex to produce butadiene and also carbon black to supply two proposed synthetic rubber plants.

Kopper's affiliate, Industrias Plasticas Argentinas Koppers (IPAC), plans to build the ethylene-polyethylene units, at Buenos Aires. The facility will be the first petrochemical plant in Argentina to use refinery gas. It's due onstream in '61, with an initial capacity of over 15 million lbs./year. Feedstock will come from government refineries.

The styrene monomer project is also to be IPAC's. Capacity, 15,000 tons/year, will be enough to supply monomer to all Argentina's polystyrene plants (including IPAC's), and the two planned synthetic rubber plants.

Texas Butadiene and Chemical International, subsidiary of Texas Butadiene, will erect the butadiene and carbon black units. The TBCI project, approved last week, includes plans for 30,000-tons/year butadiene output, 15,000-tons/year carbon black output. These plants will go up at the Patagonia Province natural gas fields.

Still undecided: who's to build the rubber plants? Texas Butadiene, Fish International and possibly Koppers are in the running.

•

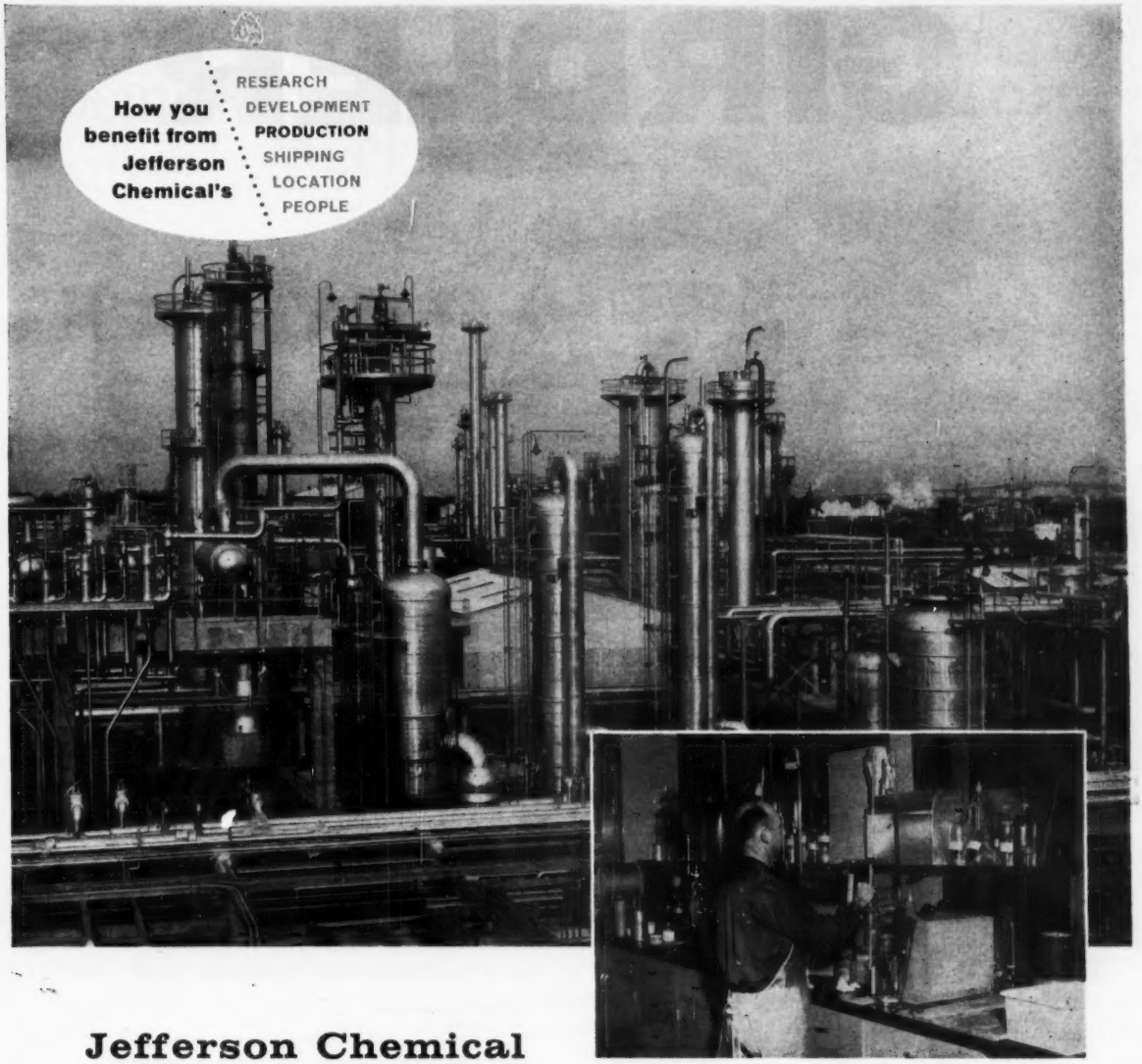
And look for American Cyanamid to expand in Argentina. Spokesmen for Cyanamid's susbsidiary in that country told *CW* the company is considering building a $15-million plant at Florencia Varela to make plastics. But spokesmen for the parent company in New York denied knowledge of the plans.

•

Will the European "Common Market" work? For a clue to the answer, watch the outcome of a problem now testing member countries: What to do with the mountainous overproduction of coal within the European Coal and Steel Community, "skeleton" of the Common Market? Ruhr producers have been balking at ECSC's decision to police its ruling against cooperative coal selling in the Ruhr. Undaunted, ECSC now wants to go further, set quotas on coal imports and mining. But the French don't want to cut their output.

•

Russia is backing up its chemical trade talk with hard cash—a $1.5-million payment to Du Pont, settling the company's long-standing claim over the neoprene technical data it supplied Russia during World War II. The settlement, the Soviets say, is intended to "clear the decks" for deals with Du Pont. Du Pont's response: "No comment." The company's policy has been to shun trading with Russia.



Jefferson Chemical doubles production . . . redoubles service!

Jefferson has now completed a two-year expansion program at the Port Neches, Texas, Plant.

New plants now on stream triple Jefferson's ethylene capacity, double glycol capacity and increase ethylene oxide production by 50 per cent. Significant increases have been made in the production of ethanolamines, SURFONIC® surface-active agents, polyethylene glycols, and piperazine. A newly constructed chlor-alkali plant adds 60,000 tons/year of caustic soda capacity. Scheduled for early summer production are propylene oxide and propylene glycol. This all adds up to a dependable supply source for some 1000 tons/day of essential organic and inorganic chemicals.

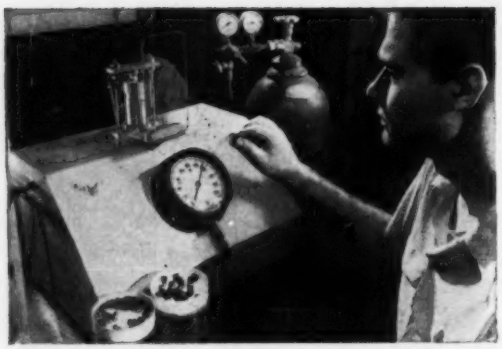
But of equal importance to you is Jefferson's expanded plant laboratory which carefully monitors and verifies product quality . . . endeavoring at all times to exceed your specifications for purity, color, and performance properties. These chemists work closely with Jefferson's Austin Research Laboratories and growing technical service staff in promptly supplying you with the right answers . . . the right products for your special requirements.

JEFFERSON CHEMICAL COMPANY, INC.

HOUSTON • NEW YORK • CHICAGO • CLEVELAND • CHARLOTTE • LOS ANGELES

124

GIRDLER G-33 CATALYST



...proves highly active and physically rugged in hydrogenation of aromatics and other organic compounds

What it is. Girdler G-33 Catalyst contains approximately 36 weight percent nickel on a refractory oxide support. It is active for the hydrogenation of organic compounds such as aromatics, acetaldehyde and methyl-ethyl ketone in fixed bed operations...and as a methanation and deoxygenation catalyst. Can be used where catalyst bed is subjected to severe physical stress.

It is normally supplied in oxidized form as ¼" x ¼" solid cylindrical tablets of 65 lbs./cu. ft. bulk density. Minimum side crush strength is 40 lbs. dead weight load. Also available in reduced and stabilized form, designated as G-52.

How it performs. G-33 has excellent activity over a wide range of temperatures and pressures. Like all nickel catalysts, activity is reduced by only a few parts per million sulphur present in feed gas stream. It will operate successfully with sulphur compounds present. Under proper operating conditions, life of 1 to 2 years may be expected.

Applications...

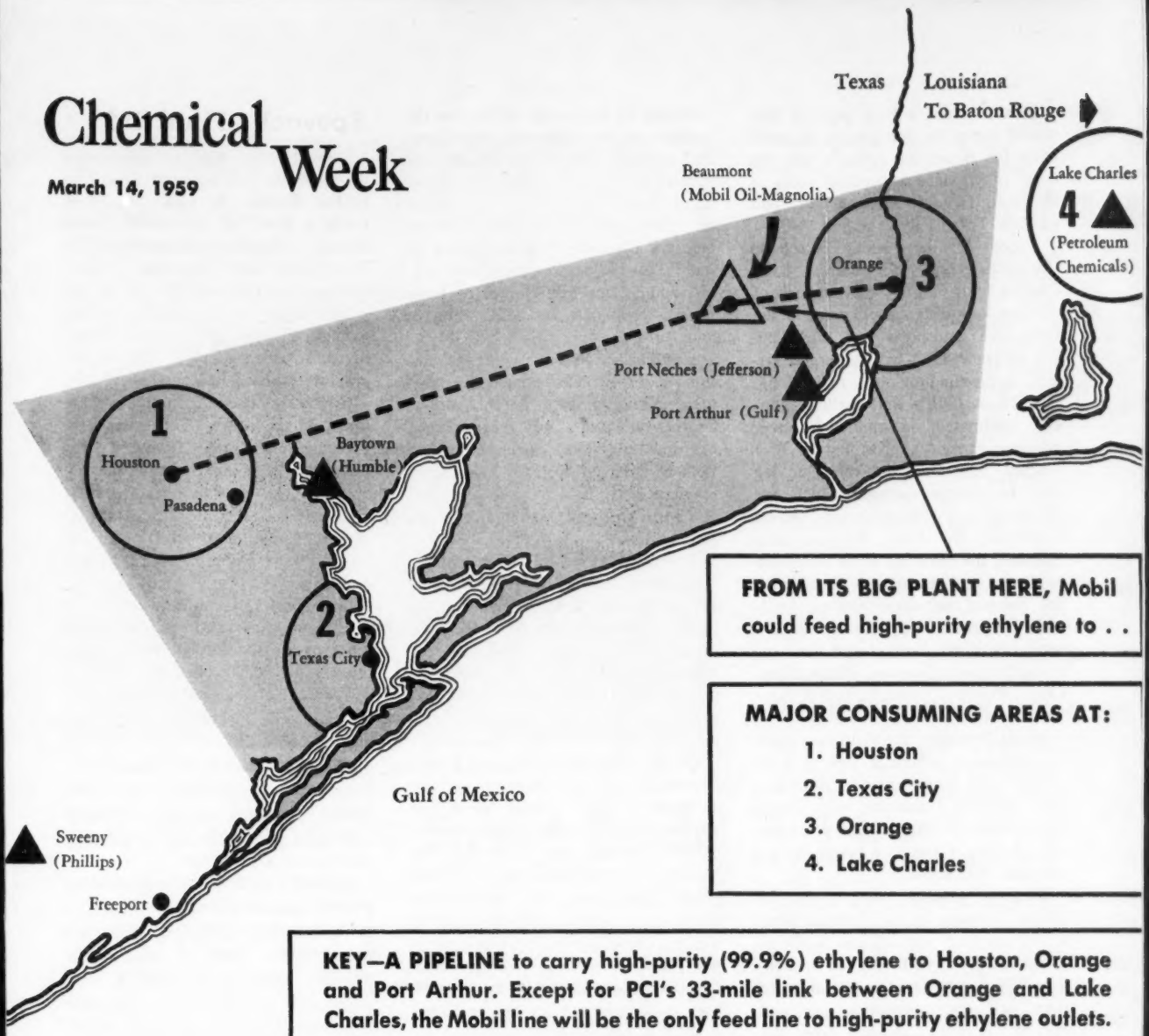
- In large-scale hydrogenation of low-molecular-weight aldehydes and ketones in liquid and vapor phase.
- In hydrogenation of aromatic streams to produce pure cyclohexane...single and mixed phases in isothermal and adiabatic reactors.
- In production of cyclohexane with a purity of 99.5% (volume) from benzene.
- In removal of aromatics from naphtha feed stocks. Hydrogenates about 19% aromatics in feed stock containing 10 parts per million sulphur.

Find out how G-33 and other Girdler Catalysts, plus our complete Technical Service, can help solve *your* processing problems.

GIRDLER CATALYSTS
LOUISVILLE 1, KENTUCKY
CHEMICAL PRODUCTS DIVISION • CHEMETRON CORPORATION
CHEMETRON

CATALYSTS FOR:
HYDROGENATION
SYNTHESIS GASES AND HYDROGEN GENERATION
DESULFURIZATION
NEW CATALYTIC PROCESSES

Chemical Week
March 14, 1959



Bid for the Big Ethylene Market

Mobil Oil's* decision last week to move into high-purity ethylene production—via a king-size, 380-million-lbs./year plant at Beaumont, Tex.—has major import for the entire Texas Gulf Coast chemical industry. Upshot: some ethylene merchants (triangles on map) now offering 98-99% ethylene will move fast to upgrade their product—to forestall a switch of customers to Mobil's material, due early in '61.

In a bold bid for a large share of the billion-pounds-plus ethylene market in the Southwest, Mobil reportedly has given construction contractor M. W. Kellogg an immediate go-ahead.

The unit, tabbed the "world's largest high-purity ethylene plant," will be built and operated by Magnolia Petroleum, the Mobil subsidiary for southwestern U.S. First part of the multistage project will cost about $25 million, include storage facilities at a site (probably Hull, Tex.) between Beaumont and primary marketing target Houston.

In addition to ethylene, Magnolia will produce butadiene and 85% propylene (that will be upped to 99% minimum purity, when a market develops). The company discloses no capacity figures on these products, but trade observers figure butadiene potential at 35-40 million lbs./year, propylene capacity in excess of 100 million lbs./year.

Backing the Bid: Mobil will face strong competition (*see illustration*) on the Texas Gulf Coast (including Esso's Baton Rouge, La., marketing area). Backing the company's bid is

*Socony Mobil Oil Co.'s newly created operating division for the U.S. and Canada.

a plan to build a long pipeline that would carry its top-graded material from the Beaumont refinery into the heart of ethylene-consuming areas at Houston, Orange, Port Arthur, and perhaps Texas City.

Except for the 33-mile Petroleum Chemicals line connecting Lake Charles with Orange, the network of existing long-distance pipelines in the Gulf area transports only lower-purity ethylene. Gulf has the largest system, approximately 140 miles long. It starts at Gulf's Port Arthur refinery (estimated 425-million-lbs./year ethylene capacity), goes first to Port Neches, then branches off. One leg runs to Orange—around which are clustered four ethylene buyers, Allied Chemical, Du Pont, Koppers and Spencer; the other leg feeds the Houston area, connecting en route with the Fannett salt-dome storage facilities. Houston ethylene consumers served by Gulf, Phillips and Shell include Celanese, Diamond Alkali, Ethyl Corp., Phillips Chemicals and National Petro-Chemicals.

From Houston, the Gulf line goes to Hitchcock, where it ties in with a Dow line from Freeport. Another line connects Hitchcock with Texas City, where Monsanto and occasionally Union Carbide Chemicals are ethylene customers.

Phillips' pipeline runs from its Sweeny refinery to the Houston area, where its final purification facilities, to make 99.8% material, are located. The PCI line to Orange carries more than half the company's merchant ethylene output. Calcasieu takes the balance for production of glycol and other ethylene oxide derivatives.

But a good high-purity ethylene transportation system doubtless isn't the only Mobil hole card. Another: preferred feedstock for an ethylene unit—refinery off-gas, rich in ethane. Such material now feeds more than half the present U.S. ethylene capacity. With the possible exception of Sinclair at Houston, Magnolia is the only refiner in the country with enough uncommitted off-gases to supply a large economical ethylene plant.

This may well be one of the selling points Mobil is using in negotiations with potential customers. The alternative to off-gas ethylene is more expensive propane- and butane-derived material.

Expansion Hope: Mobil is also counting on Beaumont to become the nucleus of an expanding petrochemical complex, with new ethylene consumers springing up in the area. Beaumont, says a spokesman, is located on "deep water," and there's ample land for expansion, an abundance of natural gas, electric power and water; and nearby are sources of basic process chemicals, including chlorine and sulfuric acid.

Customers: There's wide speculation about Mobil's prospective customers. The company is reluctant, of course, to discuss any negotiations, but one probable customer is Du Pont at Orange—both for high-purity ethylene and for top-quality propylene when they are available at Beaumont.

Another is Olin Mathieson. OM reportedly is unable to expand at its 100-million-lbs./year ethylene glycol plant at Brandenburg, Ky., for lack of suitable ethylene. And Hooker Chemical, once said to be interested in buying a going antifreeze business, may be an ethylene glycol prospect.

On the other hand, National Petro-Chemicals reportedly might have been a Mobil customer except for a difference in timetables. The latter's early-'61 startup date is too late for National Petro-Chemicals' probable polyethylene plans. This month, National starts commercial production at a new, 75-million-lbs./year polyethylene plant (Houston), and may soon report another 75-million-lbs. expansion, coming in months before Mobil is turning out its ethylene.

Even so, Mobil is confident that it will be able to sell all of its top-grade material. Some of the newer processes for polyethylene and ethylene-propylene copolymers need 99.9% ethylene.

But Mobil's delayed startup date may be well-timed. For at least another year, ethylene will be in extremely long supply, especially in the Southwest. That's one reason why Jefferson Chemical (Port Neches), normally able to absorb its ethylene output captively, is scouting for customers.

Whether Mobil's venture fulfills its expectations is moot, of course. But the company's move presents plenty of incentive for Gulf Coast chemicals producers and consumers to re-evaluate their own plans.

Spevack's Final Bid

Behind the big bronze-paneled doors of the U.S. Supreme Court, inventor Jerome Spevack last week made a final bid to block Atomic Energy Commission disclosures of his heavy-water and deuterium production process (CW, July 29, '58, p. 46).

Disclosure, his attorneys say, would jeopardize Spevack's foreign patent rights, in effect deprive him of his property without due process of law.

Spevack's attorney, Joseph Houghton, told the court, "The primary issue is whether the Atomic Energy Act gives AEC the right to destroy Spevack's patent and trade secret rights. If it does, the act is unconstitutional, permits deprivation of private property without just compensation."

Government attorney Leonard Sand said Spevack had over two years to file for foreign patents (the process was declassified by AEC in '57); Sand charged Spevack with waiting until the last minute to file the final patent fee.

The high court is now faced with these areas of decision, said Chief Justice Warren: relief for Spevack; granting a permanent injunction; and establishing a principle.

Spevack's position was supported by a brief statement read to the court by an American Chemical Society attorney. Crux: there's a need for a clear-cut statement of principle that would offer the traditional protection of private property to scientists whose inventions are under contractual use by the government.

WIDE WORLD

Spevack: A principle at stake.

CW PHOTO

Strauss: He's against selling the Russians what they want.

Hard Hand on Soviet Trade

Chemical companies may well have mixed emotions over the appointment of Lewis L. Strauss to the post of Commerce Secretary. Reason: if Strauss wins Senate approval for the job, after sharp debate slated to get under way next week, the CPI and other industries can be sure of a clampdown on exports to the Soviet Union and its satellites.

Already Strauss has broken bluntly and publicly with Administration thinking on East-West trade. In speeches and press interviews, he has made no bones about it—he favors tighter, not looser, restrictions on U.S. exports to Communist bloc nations.

The question is how far Strauss can go in clamping down export licenses under the authority that rests with his Office of Export Supply, according to the Export Control Act of 1949 (Battle Act).

Flexible Policy: Though the White House and State Dept. aren't openly backing any change in existing laws or procedures, the Administration's policy is admittedly flexible.

Last fall, the U.S. went along with its trade-hungry allies and eased its curbs for the first time in four years.

The relaxation, which came after months of study by the International Coordinating Committee (CoCom) of NATO (western Europe and Japan, but not Iceland), was adopted by the U.S. as well as by other CoCom countries. The change came not only because of pressure for more export markets but also because Communist nations were producing and even exporting some of the items on the Allied control lists—machine tools, for example.

At the same time, the U.S. kept its controls stricter than any of its allies. And, in fact, chemical industry pressure prevented more chemical products and equipment from being made eligible for export to the Soviet bloc. This is now being used as an argument for loosening trade controls further, because some exporters—the carbon black makers, for example—say Communist buyers are getting products from western Europe and Japan that the U.S. could be selling.

Forced Stand? Now, Strauss may force the Administration to take a stand on the matter of tighter controls—and for or against, it is sure to draw plenty of opposition.

Strauss has already taken several steps in the direction he wants to go. He reversed Secretary Weeks' more permissive policy last fall toward exports of copper and copper-base alloys. Last November, as part of a general relaxation, copper was taken off the so-called "positive list" of items that require special licenses for shipment—even to friendly nations.

Three weeks ago, Strauss put copper back on the positive list, citing the number of applications received as the reason.

Copper exporters are quite perturbed over Strauss' ruling. And they are not alone. One export trade association—Carbon Black Exports, Inc.—says its applications simply come back from OES without approval or disapproval, merely with the suggestion they file them again later.

Other exporters have a different complaint. They say the Commerce Dept. has been too quick to reject their applications. They resent the procedure that allows OES to reject an application without giving its reasons why.

Pipeline Ruling Opposed: Another case of exporter dissatisfaction with OES under Strauss is the now-famous abortive deal for 12,000 tons of steel pipe bound for Russia.

Commerce rejected the license because the pipe specified was more than 24 in. in diameter, which put it in a positive, special license category. And, although OES invited resubmission of the original order later, Strauss' thinking means near-certain rejection.

Strauss' views are warmly received, on the other hand, by many U.S. businessmen including a large and powerful segment of the chemical industry—The Manufacturing Chemists' Assn. Like the Secretary, they argue that it is dangerous to trade away any technical equipment or know-how to a potential enemy. And, they argue, because chemical and plastic production equipment and even whole plants are highly sought after by the Soviets and their satellites, these are the items to keep from them.

Italy's Young Chemical Giant Spreads Out

A major addition to Europe's thriving petrochemical industry is abuilding at Priolo, near the southeastern tip of Sicily. It's the newest venture into chemicals by Italy's biggest private trust, the conglomerate Societa Edison (Milan). Though still primarily an electrical utility, the wholly Italian-owned giant has spread itself into all major fields of private industry, owns 50% or greater interest in many (reportedly at least 85) associated companies.

Since '52, Edison—with help from U.S. companies—has ventured far enough into chemical production to make itself second only to Montecatini in the Italian chemical industry.

Another Gulf Coast: The Priolo project will get its raw material from oil fields in Ragusa province—a region which Edison believes will develop along the lines of the U.S. Gulf Coast, pouring petrochemicals into the Mediterranean basin and Europe.

It's being built by one of Edison's chemical subsidiaries, Societa Industriale Catanese (Sincat). The complex started out as a fertilizer plant, but it will become far more important for its petrochemical output when the latest construction is finished.

Primary petrochemical output will be chlorinated solvents, detergent intermediates for antiknock gasoline additives, ethylene and propylene.

Most of the ethylene output (about 25,000 metric tons/year) will be piped a half-mile to the new plant of Societa Celene, which Edison owns 50-50 with Union Carbide. Celene's plant, scheduled to go onstream in Dec. '60, will have a high-pressure polyethylene capacity of 30 million lbs./year, will also produce ethylene oxide, ethylene glycol, other ethylene derivatives.

Most of Sincat's petrochemical feedstock will originate from the nearby Ragusa oil fields, flow to the Esso-Rasiom refinery (biggest in Italy), thence—as straight-run gasoline—to Sincat's complex, two miles away.

Fertilizer Flows: Sincat's fertilizer production—also drawing on local raw materials—is already under way, will reach 300,000 metric tons/year.

Sicilian sulfur feeds Sincat's two 300-metric-tons/day sulfuric acid plants. Sincat has also begun producing potash fertilizers using raw kainite from its mine in Santa Catarina.

Nitric acid, phosphoric acid, ammonium sulfate, and ammonium nitrate plants are partly onstream; ammonia and potassium sulfate plants are still under construction.

To supply chlorine for its petrochemical plants, Sincat is also putting up a chlorine-caustic plant, tapping huge local rock-salt deposits for brine.

Points of Growth: Edison's expanding chemical operations are handled by the parent company's chemical division and seven associated companies, including Sincat and Celene. Plants are concentrated in four complexes: Priolo, in Sicily; Porto Marghera (Venice), Vado Ligure (Savona), and Mantua on the Italian mainland.

By far the most important of Edison's chemical subsidiaries is Societa Industria Chimica Edison (Sicedison), in which Monsanto holds a 40% interest. Sicedison is capitalized at $50 million, ranks as Italy's second largest chemical company in terms of sales and investment.

So far, Sicedison has invested over $75 million in the Marghera and Mantua complexes. Output includes polyvinyl chloride, plasticizers, phthalic anhydride, benzyl chloride, chlorine and caustic, styrene monomer and polystyrene, propylene tetramer and alkylbenzene, hydrocyanic acid, cyanides, acrylonitrile, acetylene (from natural gas), dodecylbenzene, and chlorinated solvents, including trichloroethylene, ethylene dichloride, tetrachloroethane.

Third U.S. Link: Chemstrand is the third U.S. company to join in Edison's spiraling growth. Unlike Carbide and Monsanto, which contributed cash along with know-how, Chemstrand acquired its interest solely through a licensing agreement for its acrylic fiber. It owns 26% (with an option on an additional 14%) of the stock of Edison's Applicazioni Chimici S.p.A. (ACSA), whose acrylic fiber plant is due onstream at Porto Marghera in late spring or early summer. Chemstrand also gets royalties on output and sales.

Industria Chimica Porto Marghera (ICPM), which Edison owns jointly with Societa Montefluoro—a mining company—is Europe's biggest hydrofluoric acid producer, also produces cryolite and aluminum fluoride at the Porto Marghera site.

Edison operates still another chemical subsidiary—Societa Applicazioni Processi Elettrochimici (APE) through its Cieli holding company. It produces phosphoric acid derivatives and other synthetic fertilizers at Vado Ligure.

From the Center: Through its chemical division at Porto Marghera and Mantua, the parent company also produces a broadening line of chemicals, including calcium carbide, calcium cyanamide, ferroalloys, acetylene from both carbide and natural gas, acetylene derivatives (like acetaldehyde, acetic acid, acetic anhydride), acetates, caustic soda, chlorine, sulfuric acid, ammonia, nitric acid, and nitrogen fertilizers—mainly ammonium sulfate and ammonium nitrate.

Future Force: For other European producers and exporters, Edison has already become a force to contend with. Its modern plants (95% were built in the last six years) and strategic raw-material position will make it an effective competitor in the European "Common Market." And the odds are high that Edison will be pushing its way to an even larger share of Europe's chemical jackpot.

Belt Tightening

In the latest round of the government's hard-hitting antitrust campaign, a federal grand jury last week indicted Rubber Manufacturers Assn. and 10 rubber firms on a Justice Dept. charge of fixing prices and conditions of sale on rubber belting.

The companies: Goodrich, Goodyear, U.S. Rubber, New York Rubber, H. K. Porter, American Biltrite Rubber, Hewitt-Robins, Raybestos-Manhattan, Acme-Hamilton and Lee Rubber & Tire.

The indictment came as a "surprise," an RMA spokesman told *CW*. "It has always been our policy to comply with all the laws, including the antitrust laws. It's common knowledge that the rubber industry is highly competitive. We believe the rubber belting business is just as competitive as the rest of the industry."

Conviction could carry a fine of up to $50,000 for each defendant.

Law Interpretation

Last week pretesting provisions of the '58 food additives law—which will make manufacturers provide advance proof that their additive is safe—officially took effect. And, at a conference on safety of packaging materials sponsored by the Packaging Institute at New York's Statler-Hilton Hotel, Food & Drug Administration officials outlined various aspects of the law, told of FDA test programs.

FDA's Asst. Deputy Administrator, Arthur Checchi, clarified some important points to be covered in any petition for FDA approval. Included: extent to which an additive or packaging material will migrate into foods, data showing that the additive will accomplish its intended purposes, practical methods of determining the quantity of the additive in finished products, a record of all scientific studies made on the product.

Projects: During the meeting, FDA delegates brought out that neither high-density nor low-density polyethylene film has yet been cleared for use in packaging fatty foods.

FDA's Division of Pharmacology chief, Arnold Lehman, said FDA is in the midst of extensive tests to determine the toxicity of the wrap. One finding: that 1% of an oily substance is present in most films.

Lehman also said FDA is investigating heat-sealing of films—such as those used for meat packaging.

Saline Progress

The Dept. of Interior last week okayed plans for the largest sea-water conversion plant in the U.S. Cost: $2 million. Capacity: 1 million gal./day of fresh water.

The process, developed by W. L. Badger & Associates (Ann Arbor, Mich.), was picked last week after pilot tests at Harbor Island, N.C., demonstrating its ability to eliminate scale formation at "much higher temperatures than heretofore possible."

Badger figures it can convert sea water for less than $1/1,000 gal., about half the cost rate of existing plants. Foreseeable goals of the program (within 10 years): 50¢/1,000 gal. for converting sea water, 25¢/1,000 gal. for brackish water.

EXPANSION

Liquid Gases: Linde Co., division of Union Carbide Corp., will build a 100-million-cu.ft./month liquid oxygen and nitrogen plant near Huntsville, Ala. Completion is scheduled for early in '60. Electric power will be supplied by City of Huntsville Utilities. The plant, estimated to cost "several million dollars," will employ 50 persons.

•

Copper: Kennecott Copper Corp.'s Utah Copper Division will spend $10 million to modernize the Garfield, Utah, smelter formerly owned by American Smelting and Refining Co. Principal change will be from roasting of concentrates prior to firing in reverberatory furnaces to "green firing" of concentrates.

•

Fertilizer: California Spray-Chemical Corp. last week awarded contracts for two major processing units at its proposed multimillion-dollar fertilizer plant in Kennewick, Wash. Chemical Industrial Corp. (Cincinnati) will build nitric acid and ammonium nitrate plants at a cost of about $2 million.

•

Basics: Electric Reduction Co. of Canada will build several new units at Port Maitland, Ont., for producing sulfuric acid, phosphoric acid, sodium phosphate and other products. Cost and construction schedules were not revealed.

COMPANIES

Texas Gulf Sulphur Co. has acquired a five-year option on lithium mining properties near Charlotte, N.C., through an agreement with Basic Atomics Inc. (Cleveland). The deal includes a five-year option on process patent rights for a process to recover lithium from spodumene-bearing ores. Financial details were not disclosed.

•

Food Machinery's Becco Chemical Division plant in Buffalo, N.Y., was rocked by an explosion last week when "chemical vapors" used in research on missile fuels ignited. Special Projects Branch Director Noah Davis termed the blast "spectacular-looking but minor."

Callery Chemical's boron fuel plant near Lawrence, Kan., was also the scene of an explosion recently. Damage was minor.

•

Thiokol Chemical Corp. has received a government contract to build small booster rockets for the Little Joe data-gathering missile. Little Joe, a part of the Mercury manned-satellite project, will be used to provide information on problems that might develop with the manned capsule in Mercury satellites.

FOREIGN

Acrylics/Britain: Imperial Chemical Industries will build Britain's first large-scale acrylonitrile plant at Teesside, northern England. Production will begin late in '59. Output is slated chiefly for manufacture of acrylic fibers.

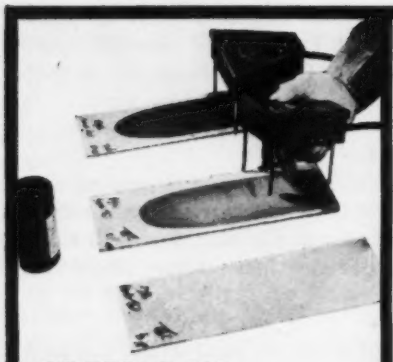
•

Fertilizer/India: The Indian government will build a $12-million fertilizer plant near a newly completed steel center in Rourkela. The plant will produce 450 tons/day of ammonia from coke-oven gases originating in the neighboring steel works. Production is scheduled to begin by March '62.

RUB SCRUB BEND BANG!

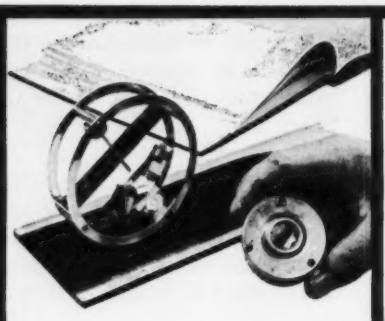
Your **protective coatings** will pass these laboratory and "real life" performance tests when they contain **zirco®**

A DRIER CATALYST



SPEED DRY

zirco is a true synergistic compound which, through cooperative action, activates or catalyzes the efficiency of active drying metals. Gardner Time Recorder demonstrates one of **zirco's** most significant advantages — through-hard dry.

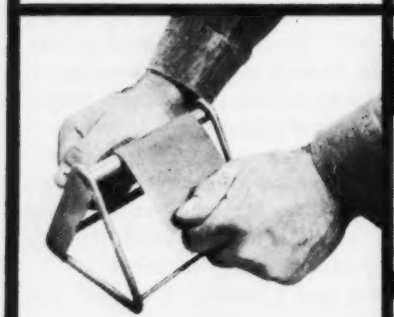


HARDNESS

With the Sward Hardness Rocker, the scientific readings of numbers-of-rocks data determines a film's degree of through hardness. **zirco**-added protective coatings show outstanding through-hard results.

GLOSS

The Gloss Meter test shows that **zirco** improves gloss and gloss-retention in most formulations and minimizes sacrifices and compromises in the formulation which have been made to gain maximum gloss.



FLEXIBILITY

Flexibility is important in automotive, implement, appliance and metal decorating finishes. In nearly all formulations, the Mandrel test shows that **zirco** improves paint flexibility, particularly in extreme cases involving one paint for two applications — air dry and bake.

SCRUBBABILITY

As shown by the Gardner Scrubbability Test, the incorporation of **zirco** in a formulation has been known to increase the scrubbability of a paint from 10,000 to 40,000 strokes.

IMPACT RESISTANCE

Paints applied to metals require high impact-resistance. **zirco** contributes adhesion, toughness, flexibility, and hardness without embrittlement.

The majority of paint manufacturers are now using **zirco** in their formulations. **zirco** has permitted the formulator to break a 100 year precedent, and replace lead completely.

We suggest an immediate investigation of **zirco.** You can get, **FREE,** the colorful and factual 32-page brochure which shows 21 advantages of incorporating **zirco** in more than 18 different types of formulations. Write today!

ADVANCE SOLVENTS & CHEMICAL, 510 Jersey Avenue, New Brunswick, N. J.
Division of Carlisle Chemical Works, Inc., Reading, Ohio

See Chemical Materials Catalog for other Advance and Carlisle products

ADVANCE

Washington Newsletter

CHEMICAL WEEK
March 14, 1959

Modernization of its guide to depreciation rates may be scrapped by the Treasury Dept. It may instead retain the present schedules, as originally published 17 years ago in the Internal Revenue Service's Bulletin F.

In effect, a decision of this kind would lead to gradual abandonment of Bulletin F as a guide to taxpayers and Internal Revenue agents. It would become less and less important to corporations and individuals wrestling with the problem of depreciation, and eventually would be all but useless.

There are two reasons for this:

(1) Treasury officials admit that the present Bulletin F is already outmoded. It does not list hundreds of items that have been adopted by industry in the past 17 years. If efforts to modernize it are shelved, the bulletin will become steadily less applicable as still more new types of machinery and equipment are adopted.

(2) For years, IRS officials have been trying to wean revenue agents away from using the bulletin as an absolute standard of useful life of productive equipment. They have been stressing to agents—and taxpayers—that actual usage by the property owner takes precedence over anything in Bulletin F. Officials now feel that this campaign is getting results and that old schedules will become increasingly less important.

Fred Scribner, Jr., Under Secretary of the Treasury, worries that a new version of Bulletin F would be accepted as gospel by revenue agents and would be used to "override the actual experience of an individual taxpayer."

So the final decision may be to let Bulletin F wither away.

Scribner makes two additional points on depreciation policy not directly connected with Bulletin F:

(1) The Treasury Dept. is considering new legislation that would require sellers to pay ordinary income taxes on receipts from the sale of depreciated property. Under existing law, the lower capital gains tax is used by many taxpayers.

(2) Officials are still opposed to suggestions that depreciation allowances be adjusted to the cost of replacement instead of being based solely on original cost, as they are now.

•

Look for FDA to issue a list of about 200 flavorings exempted as "safe" under the new food additives amendment. The list will probably be made public by the middle of this month.

The list of exempt additives published Dec. 9 did not include flavorings because officials wanted more time to digest the data available for the products. The Administration has also extended until April 9 the deadline for filing comments on the entire exempt list.

•

A Supreme Court decision on antitrust cases in the regulated industries may have tremendous significance in the gas, private electric power, atomic energy, broadcasting and other industries. The decision clearly gives the Justice Dept. authority to take antitrust action against some of the regulated industries—an area where Justice has never been very sure of its grounds.

The Supreme Court case involved a swap of television stations between NBC and Westinghouse Broadcasting Corp., which gave NBC increased dominance in the top markets and involved allegations of "coercion" by the network. NBC claimed, in effect, that FCC approval settled the antitrust question. The high court said, however, that granting of a license by FCC does not stop the Justice Dept. from coming in later with an antitrust suit.

Justice Dept. lawyers themselves are not sure just how much practical effect this decision will have. One place where it might apply immediately is in the proposed merger of El Paso Natural Gas Co. and Pacific Northwest Pipeline Co. In this case, a district court is holding off antitrust action pending a decision by the Federal Power Commission.

The decision's effect on such issues as atomic power monopoly will depend on how far Justice wants to push it—and the Administration has been vigorous in its trustbusting.

•

A compensation law for workers exposed to radiation is being considered by Congress. Radiation injuries thus far have been few and far between. But with the growing use of radioisotopes in the chemical and other industries, there's some worry over whether workers are amply protected.

Accordingly, the Congressional Joint Committee on Atomic Energy is holding hearings into employee radiation hazards. Organized labor, alleging that the states have failed to come to grips with the unique problems involved, is demanding a federal workmen's compensation law. The AFL-CIO also warns against any dilution of federal responsibility for worker safety.

•

A $400,000 loan to help finance a kenaf bag-making plant at Escuinata, near Guatemala City, has been granted to Productos de Kenaf, S.A. (Prokesa) of Guatemala. Recent technical breakthroughs (development of machines for harvesting the crop) indicate great potential for this industry in Central and South American countries.

National Aniline

RESIN CHEMICAL HEADQUARTERS

we can serve you better
because we have
more to serve you with!

ANHYDRIDES

Maleic Anhydride
Phthalic Anhydride
Succinic Anhydride
Tetrahydrophthalic Anhydride
Hexahydrophthalic Anhydride
Dodecenylsuccinic Anhydride
NADIC® Anhydride
NADIC® Methyl Anhydride

DIBASIC ACIDS

Adipic Acid
Fumaric Acid
Succinic Acid

SOLVENTS

NAXOL®
Cyclohexanol
NADONE®
Cyclohexanone

ANTI-SKINNING AGENTS

ASA®
Antioxidant B®
Antioxidant D®

The broader the line, the better the service and the greater the savings for you.

National Aniline makes the most comprehensive line of resin-chemicals available today from any single source. By concentrating your orders with National Aniline, you can simplify purchasing, minimize inventory and frequently lower your delivery costs. On combination orders you get mixed car or truckload rates from plant or principal branch warehouse stocks.

And there's never a question on quality because National's modern plants are integrated right back to basic raw materials wholly within the Allied Chemical group.

Before you place another order, get our price quotation on any or all of the resin chemicals listed.

NATIONAL ANILINE DIVISION
40 RECTOR STREET, NEW YORK 6, N. Y.
Atlanta Boston Charlotte Chicago Greensboro Los Angeles
Philadelphia Portland, Ore. Providence San Francisco
In Canada: ALLIED CHEMICAL CANADA, LTD., 100 North Queen St., Toronto 14

Allied Chemical

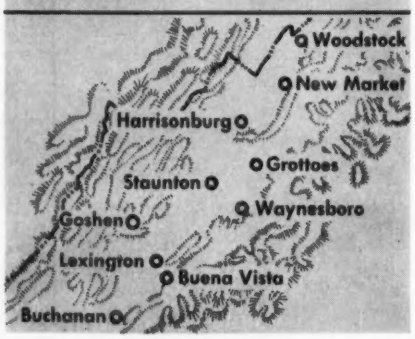
Our new plant draws workers from 900 square miles!

Each year, the march of mechanization on Shenandoah Valley farms frees a harvest of new industrial manpower. And the Valley's network of modern (fully paid for) highways brings that manpower to your plant parking lot from miles around.

Matching that growing manpower, is VEPCO's growing electric power . . . 1,700,000 kilowatts now, due to top 2,000,000 kilowatts by 1961.

It's proved a winning combination for giants of industry and smaller plants that have come to this land of many resources and pleasant living. For confidential site-finding help, write or telephone

VIRGINIA'S SHENANDOAH VALLEY

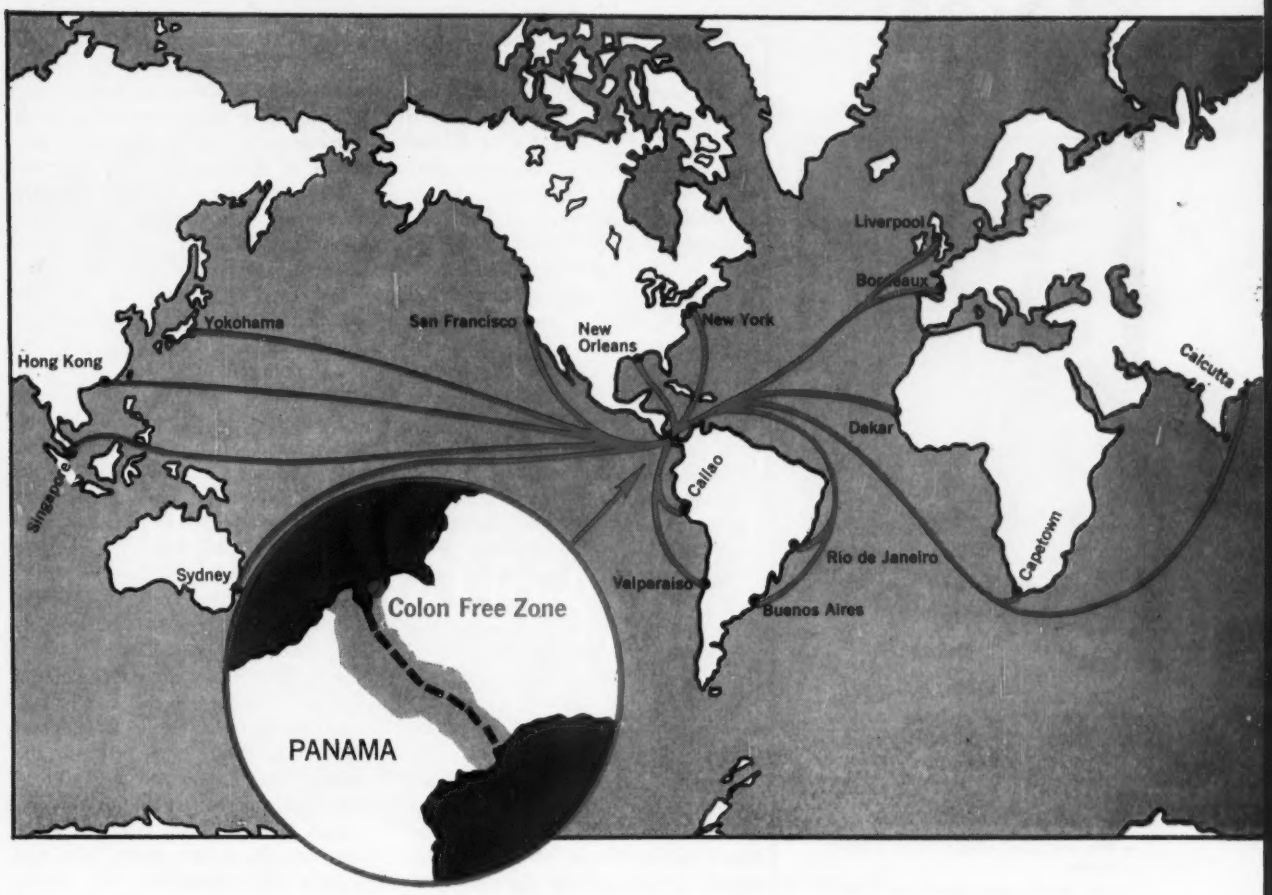


VIRGINIA ELECTRIC and POWER COMPANY

Serving the Top-of-the-South . . . in Virginia, West Virginia and North Carolina

Clark P. Spellman, Mgr., Area Development, Electric Bldg., Richmond 9, Va., MI 9-1411

Central location, tax savings lure exporters to Panama



Colon Free Zone—Way Station for Profit

Despite the strong possibility this year of some form of tax relief for U.S. private foreign investors (CW, Feb. 28, p. 27), process industries management last week still looked with favor on so-called "tax havens." Panama's Colon Free Zone is such an area. Here, profits can be accumulated without incurring U.S. corporate income tax liability. As a transhipment point for exports from the U.S., it's immensely popular with some CPI firms.

Created in '48 and opened in '53, the Colon Free Zone was established primarily to help Panama's economy by providing more jobs and trade. To the 500-odd U.S. and foreign corporations (including over a dozen CPI companies) using the Zone's 531,520 sq. ft. of warehouse space in handling more than $70 million worth of goods annually, the Zone offers tax and shipping advantages.

Tax Incentives: Simply put, a company incorporated in Panama may deposit or invest accumulated profits in any form in any country of the world, including the U.S., without having them subject to Panamanian or U.S. taxes. This permits accumulation of profits for reinvestment by a subsidiary company of a U.S. parent firm. If profits are returned to the parent firm, they would, of course, be subject to the U.S. corporate income tax.

The U.S. Treasury permits this tax-free accumulation of profits by foreign-based subsidiaries of U.S. firms as long as there is a "basic business reason" involved. So far, Treasury has found in Free Zone operations the "visible substance" required for compliance with the U.S. tax law.

Freedom from Panamanian income taxes results from extremely liberal tax laws governing the countries' corporations. For example, companies manufacturing in the Zone under special-concession contracts with the Panamanian government pay no taxes on income derived from sales outside Panama. Other companies manufacturing in the Zone pay taxes on foreign-source income, but with a 90% discount.

Since Jan. '58, companies "re-exporting" products (not manufactured in the Zone) have been granted a

KENNEDY

AIR FLOAT

THE AIR-GRAVITY CONVEYOR WITH THE POROUS TILE CONVEYING SURFACE

The exclusive KENNEDY porous tile conveying surface makes Air-Float the preferred method for moving dry, pulverulent materials horizontally.

Air-Float is preferred because:

- the smooth surface has no dead spots
- only small volumes of low pressure air are needed, power consumption is less
- the tile retains its shape, resists elevated temperatures
- maintenance and down-time are virtually eliminated
- there are no screws, belts, gears, or chains—no oil, no dust.

Air-Float Conveyors are proven. Years of operation have required no replacement of conveyor parts.

Send for literature describing KENNEDY Pneumatic Conveying Pumps, Air Activated Containers, Air-Float Conveyors, complete pneumatic conveying systems and KENNEDY Research and Testing Services.

KVS

KENNEDY VAN SAUN

MANUFACTURING & ENGINEERING CORPORATION

405 PARK AVENUE, NEW YORK 22, N.Y. • FACTORY: DANVILLE, PA.

90% discount on taxes on profits earned from foreign sales. In addition, there are no municipality or local taxes, fees, dues, duties or other imposts on goods stored, handled or leaving the Zone, or on commercial operations performed there. There are no taxes on invested capital, dividends or remittances; there is, however, a social security tax of 8% of each employee's salary, shared equally by employer and employee.

Distribution Advantages: The Zone is centrally located for doing business either in Latin America or the Eastern Hemisphere (*see map*). Within half a mile of the Zone is the Atlantic port of Cristobal, which has first-rate cargo-handling facilities for any size of merchant ship. Fifty truck miles away by good roads is the Tocumen International Airport, providing good air service to world markets.

Pointing to the variety of activities carried on in the Zone — warehousing, manufacturing, assembling, processing, packaging, distribution and redistribution, etc. — many U.S. firms feel that it will continue as a vital distribution center, even if proposed U.S. tax concessions for foreign investors nullify the tax advantages that are gained by operating in the Zone.

Leasing Agreements: There are several ways for U.S. firms to set up operations in the Zone. Land can be leased for a 25-year period with renewal options and the right to construct buildings. In addition, government buildings can be leased for 55-75¢/square meter (approximately 10 sq. ft.) per month, and public warehousing can be obtained for $1.50/ton of goods per month.

Firms operating in the Zone market their goods in four ways: (1) in the Canal Zone (including U.S. installations), (2) to ships in transit through the canal, (3) to foreign nations, and (4) to consumers in Panama itself. All such sales are duty-free, except sales to Panamanian consumers; the latter are taxed as foreign imports.

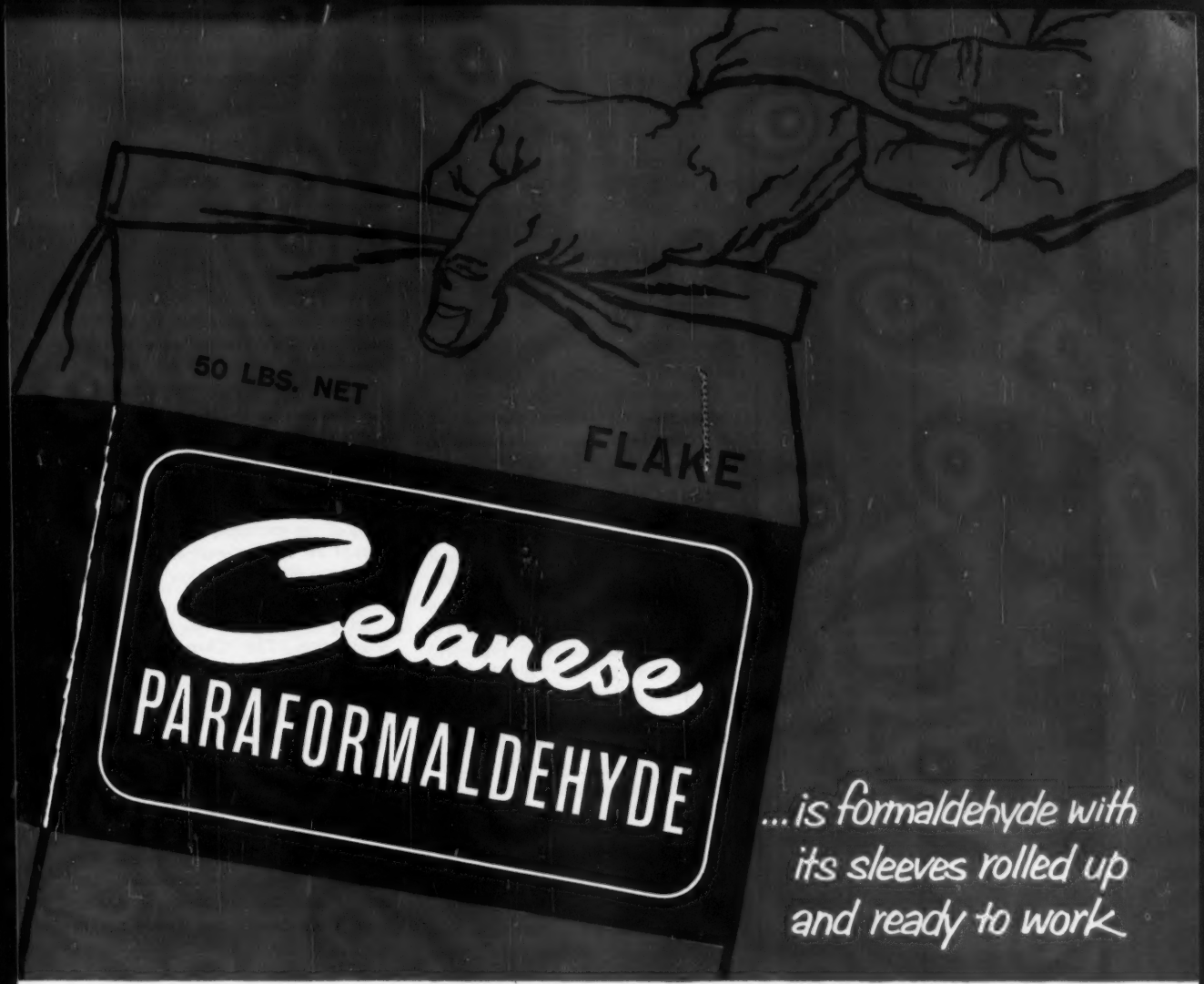
A recent Free Zone policy, says Zone General Manager M. Everardo Duque, provides that under a long-term lease the Zone will construct a manufacturing or assembling plant to user's specifications, exempting from duty all machinery and equipment imported to establish a new plant. In addition, profits from the export sale of locally produced goods are exempt from taxation for 20 years.

Drugmaker's Operations: Drug and pharmaceutical companies set the pace in Free Zone business. Such firms as Pfizer, Parke, Davis, Squibb-Mathieson, McKesson & Robbins and Upjohn have found the Zone highly suitable as a base of operations, particularly in serving Latin-American markets. Overnight shipment from the Zone of high-unit-cost drugs and pharmaceuticals has brought a new concept to overseas marketing. It has aided U.S. firms in their race for competitive markets by providing a distribution edge they could not have by shipping directly from the U.S.

Typical of how U.S. companies use the Zone is the operation of Upjohn (Kalamazoo, Mich.). It uses the Zone as headquarters for its wholly owned foreign subsidiary, Upjohn Overseas Corp. Activated Jan. '58, the subsidiary distributes Upjohn drugs and pharmaceuticals to Eastern Hemisphere areas not served by other Upjohn subsidiaries. Upjohn Overseas, which moved into its own building — 16,000 sq. ft. of office and warehouse space — last September, does no manufacturing, labeling or packaging. Products shipped to the Zone from Kalamazoo are already packaged and labeled in several languages. The subsidiary promotes products, accepts orders, ships, bills and collects. Its customers are mostly "captive" distributors in Europe, and in the Middle and Far East. It requests only specific products from Upjohn's U.S. plants.

As a Panamanian corporation, the subsidiary gains significant tax advantages. Upjohn Overseas pays, on a graduated-tax basis, up to 36% on its profits from foreign business, but it receives 90% credit. It actually pays 3%. This means that the subsidiary company can accumulate the 97% tax savings, use it later to establish manufacturing facilities inside foreign countries whose rising tariff walls make imports of U.S.-made goods economically unfeasible.

When the subsidiary company remits dividends to the parent company, of course, such funds are fully taxed (52%) under U.S. law. If the subsidiary's business were restricted to the Western Hemisphere, Upjohn likely would attempt to qualify its



Paraformaldehyde in present equipment

PRODUCES: 30% larger batches—greater resin output (higher reactivity)
⅓ shorter cycles—cuts hours off reflux and dehydration steps

Paraformaldehyde in new installations

ELIMINATES: heated storage tanks—large tankage areas

REDUCES: steam, electricity and cooking costs

DO YOU KNOW THAT Celanese is formaldehyde headquarters? It's your top supply source for formalin, paraformaldehyde, Formcels (in specified alcohols) and trioxane (completely anhydrous). Celanese Corporation of America, Chemical Division, Dept. 652-C, 180 Madison Avenue, New York 16, N.Y.

Canadian Affiliate: Canadian Chemical Company Limited, Montreal, Toronto, Vancouver.
Export Sales: Amcel Co., Inc., and Pan Amcel Co., Inc., 180 Madison Avenue, New York 16, N. Y. Celanese®

Celanese CHEMICALS

When your success is at their fingertips—

RISDON VALVE QUALITY IS VITAL INSURANCE

Risdon aerosol valve *quality* . . . performance-proven on many millions of packages, gives full assurance of customer-pleasing results over the entire package life.

An inferior valve can be your most expensive "bargain." Insure success — specify Risdon.

Write For Free Booklets On RISDON Valves

FOR Pressurized Products Packaged in Glass, Metal or Plastic Containers.

DISPENSING Conventional Aerosols, 3 Piece Products, Alcohol Base Products, Water Base Products, Foam Products, Powder Sprays, Metered Sprays, Ultra Low Pressure Applications, Products Containing Propellent Emulsions or Dispersions, etc.

RISDON THE RISDON MANUFACTURING CO.

Valve Division Naugatuck, Conn.

ADMINISTRATION

subsidiary as a Western Hemisphere trade corporation so as to benefit from the 38% tax rate accorded such corporations. When dividends are remitted, Upjohn's benefits from a Free Zone type of operation work out to be less than the benefits granted a Western Hemisphere trade corporation. However, if the subsidiary company's profits are accumulated and reinvested, the savings are quite significant.

Management Service: Business in the Colon Free Zone has soared in the past few years (500% in five years, in terms of total volume of goods handled) with the result that various services have sprung up to assist new corporations. One of these is Overseas Management Co. of Panama, which specializes in providing warehousing and management services for corporations that prefer to limit the cost of their initial operations in the Zone.

Its U.S. subsidiary, Overseas Management Services (New York) — appointed this year by the Free Zone as its U.S. representative — will contract with U.S. firms to provide warehousing and freight forwarding services. Using its own facilities, the firm receives goods shipped from U.S. plants, warehouses them, redistributes them by air to Latin-American customers. Charges for this service are based on gross billing—5% for the first $100,000, 4% for the second $100,000, 2½% for $300,000 and over.

To help new Zone corporations minimize their staffs, Overseas Management provides such services as accounting, bookkeeping and other clerical functions. Rates for these services are on a per-hour basis; $15 for administration, $6 for accounting, $3 for clerical services.

Zone's Future: U.S. management men know that rising tariff walls and foreign nations' drives toward economic self-sufficiency will all but completely block future exports from the U.S. to many key market areas. By accumulating profits on a tax-free or tax-deferred basis in such areas as the Colon Free Zone, U.S. management is able to pay the cost of building plants in foreign countries, can better absorb the cost of preparing for the day when on-the-spot production will be the only way to sell in key foreign markets.

Layoff Alarm

"Persistent and alarming" rumors over the past few months have caused the Chicago section of the American Chemical Society to set up a committee to investigate alleged mass layoffs of chemists, engineers and other technical personnel in the Chicago area. First reports were that 120 chemists had been laid off, later the number of dismissals was said to be 70 chemists and 100 engineers.

Fred Wilks, chairman of the section's long-range planning committee, said the investigating committee is setting out to determine the magnitude of the problem, the policies employed by various companies, and the type of policy the section should recommend.

In a recent editorial, the section's publication, *The Chemical Bulletin*, reported, "Reorganizations among some large companies gave lovely, smooth and glossy pictures that were little more than press releases. . . . We will not submit to the tranquilizing effect of such terms as 'transferred' and 'relocated.' Transferred to what? Relocated where? Rumors of mass layoffs are demoralizing and damaging, both to the companies concerned and to the chemical profession. They cannot and should not be ignored."

A *CW* check of several companies in the Chicago area revealed that other than the normal relocations and transfers, nothing unusual has occurred.

IDEAS

Chemical Lecture Course: Chemical Public Relations Assn.'s Chemical Lecture Course, popular last fall with New York area nontechnical executives, is being offered again, beginning March 18.

A series of eight lectures will be held on consecutive Wednesdays at 4 p.m. at 380 Madison Avenue, New York City. The lectures will be given by Sidney Karlan, Reaction Motors. Enrollment is $20, can be made by contacting CPRA Secretary Larry Bogart, Allied Chemical Corp.

•

New Publication: A new, bimonthly newsletter, "The Engineer and Scientist in Management," is available to help supervisors of scientific and

Progress Report...

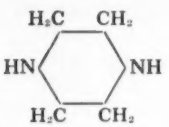
— Piperazine flake
— Morpholine
— CELLOSOLVE solvent

Piperazine flake deserves attention

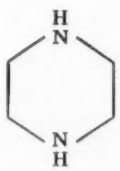
Although piperazine has been used for its medicinal and anthelmintic properties for many years, it deserves further study for other applications.

Among its physical properties, piperazine boils at 146°C., melts at 110°C., and is soluble in water (25% by weight) at 20°C. It is also highly soluble in methanol, and to a lesser degree in other organic solvents.

The crystals of piperazine are white and hygroscopic. Its chemical structure shows piperazine to be a saturated, six-membered heterocyclic compound with its two nitrogen atoms in the para position:



Or, for simplicity:



Common salts of piperazine are the citrate, phosphate, sulfate, adipate, and dihydrochloride. These and other derivatives have been tested and found effective as anthelmintics and vermifuges for poultry, swine and domestic animals.

Because of the biological activity of some of its derivatives, piperazine has been used as an intermediate in the production of motion sickness remedies, antihistamines, and tranquilizing drugs. Derivatives have also been developed for use as commercial insecticides, fungicides, and antimicrobials. Other possible applications are in the industrial production of surface active agents, plasticizers, solvents, lubricants, and high molecular weight polymers.

Experimenters with piperazine and its derivatives have unearthed a surprising number of tentative applications. These include possible uses in the pharmaceutical field as anti-convulsant agents, anesthetics, sedatives, and hormones; as treatment for burn shock and hypertension; and as analgesics. Industrially, piperazine compounds are being studied as accelerators for rubber vulcanizing; corrosion inhibitors for water or alcohol solutions; as waxes and coatings; as emulsifiers, wetting agents, dispersants, and cleaning agents; and as surface active agents.

CARBIDE supplies piperazine in flake form, easy to store and handle. Minimum purity is 98% by weight. It is shipped in polyethylene-lined drums in quantities of six, 60, and 100 lbs.

The potentialities of piperazine, its compounds and derivatives provide a broad and interesting avenue for further exploration. Much of the evaluation already accomplished on piperazine has been compiled in a bibliography now available from CARBIDE, along with many suggestions for its use. To obtain this comprehensive listing, check the coupon.

Morpholine in water-resistant polishes

Morpholine is a colorless, mobile liquid that forms soaps with excellent emulsifying properties. This makes it particularly useful in polishes where water resistance of the dried emulsion film is desired.

Formulas for rubless floor polishes can be improved by the addition of morpholine. Wax and resin polishes, especially automobile polishes, gain greater water resistance when morpholine is included in their composition.

Morpholine is one of many useful emulsifier ingredients described in the booklet, "Emulsions and Detergents." For a copy, check the coupon.

A solvent for improving lacquers

If you manufacture lacquers, and are not yet familiar with CARBIDE's CELLOSOLVE solvent, here's a tip you may use. CELLOSOLVE solvent heightens the gloss of lacquers and improves flow-out characteristics. It has a mild odor and a low evaporation rate. It provides powerful solvent action in both alkyd and nitrocellulose resins, and in phenolic varnishes.

This CARBIDE solvent has scores of other uses—in textile and leather dyeing, in metal and glass cleaners, in drug and antibiotic manufacturing, in formulating hydraulic and brake fluids.

The booklet, "CELLOSOLVE and CARBITOL Solvents," contains much useful information about CELLOSOLVE solvent and other glycol-ethers. Check the coupon for a copy.

Tear out this coupon. Check the boxes on which you'd like more information, and mail to Dept. H, Union Carbide Chemicals Company, 30 East 42nd Street, New York 17, N. Y. ☐ Piperazine bibliography. ☐ Emulsions and Detergents. ☐ CELLOSOLVE and CARBITOL Solvents.

Name_____

Title_____

Company_____

Street_____

City_____ Zone____

State_____

And remember, there is a CARBIDE sales office near you where you can obtain the services of a CARBIDE Technical Representative. His wide industry experience is backed both by extensive chemical training and by Technical Specialists.

"Cellosolve" and "Union Carbide" are registered trade marks of Union Carbide Corporation.

UNION CARBIDE CHEMICALS COMPANY
DIVISION OF
UNION CARBIDE
CORPORATION

NOW! KAISER ALUMINUM OFFERS A WIDER SELECTION OF STANDARD PIPE SIZES!

Kaiser Aluminum's new, expanded selection of standard* pipe sizes puts you in line for a better-than-ever deal in aluminum piping systems.

Now available in standard sizes—with no special tooling required—are: A.S.A. Schedules 5, 10, 40 and 80; plus heavy duty construction, mining and petroleum pipe, and light weight construction pipe.

Wider Selection Can Save You Money

This broad range of standard pipe sizes gives you a wider choice of proper wall thicknesses for the pressures involved in your piping system . . . a choice that can save you money.

For example, suppose your present low pressure system is made up of traditional A.S.A. Schedule 40 galvanized steel pipe, and rust, corrosion and wear make replacement necessary. If the heavier thickness of Schedule 40 pipe isn't required for the pressures involved, now is the time to consider aluminum.

By choosing either A.S.A. Schedules 5 or 10 Kaiser Aluminum pipe in standard sizes, you can save up to 30% of the price of Schedule 40 steel.

Save Money On Maintenance

A piping system of Kaiser Aluminum looks clean and bright when installed, retains its handsome appearance year after year. Unlike steel pipe, aluminum can't rust, *never needs painting.* Maintenance expenses are held to a bare minimum.

Your Kaiser Aluminum Distributor has full details on the money-saving advantages of lightweight, corrosion resistant aluminum pipe, as well as complete information on availabilities.

Profit now from his expert technical knowledge, extensive warehouse facilities and prompt delivery service. You'll find the distributor located nearest you listed below.

Kaiser Aluminum & Chemical Sales, Inc., 919 No. Michigan Avenue, Chicago 11, Illinois.

*Your Kaiser Aluminum Distributor can also supply aluminum pipe outside the range of products in *standard* A.S.A. Schedule sizes, plus non-standard A.S.A. Schedule number and Modified Wall sizes. He also makes available Kaiser Aluminum internally clad or coated pipe for applications requiring extra corrosion resistance.

KAISER ALUMINUM

THE BRIGHT STAR OF METALS

KAISER ALUMINUM PIPE DISTRIBUTORS SERVING PETROLEUM AND MINING INDUSTRIES

DALLAS, TEXAS
Oilwell Supply Div.—United States Steel Corp.

GRAND JUNCTION, COLORADO
S & M Supply Co.

FAIRMOUNT, WEST VIRGINIA
Fairmount Supply Company

OKLAHOMA CITY, OKLAHOMA
Republic Supply Co.

LOGAN, WEST VIRGINIA
Keystone Construction Co.

ABILENE, TEXAS
Dunigan Tool & Supply Co.

HOUSTON, TEXAS
Tube-Kote, Inc.

McCLURE, VIRGINIA
Erwin Supply & Hardware Co.

KAISER ALUMINUM PIPE DISTRIBUTORS SERVING PROCESS AND GENERAL INDUSTRIES

ATLANTA METROPOLITAN AREA
Hubbell Metals, Inc., Marietta, Ga.
U.S. Steel Supply Div., Birmingham

BALTIMORE, MARYLAND
Hill-Chase Steel Co. of Maryland

BEAUMONT, TEXAS
Standard Brass & Mfg. Co.

BOSTON METROPOLITAN AREA
Chase Brass & Copper Co.
Hawkridge Bros. Co.
Zurbach Aluminum Co.

BUFFALO, NEW YORK
Ernst Iron Works

CHICAGO METROPOLITAN AREA
Chase Brass & Copper Co.
Fullerton Steel & Wire Co.
Korhumel Steel & Aluminum Co.
Saunders & Co.
U.S. Steel Supply Div.—United States Steel Corp.

CINCINNATI, OHIO
Morrison-Drabner Steel Co.

CLEVELAND, OHIO
Chase Brass & Copper Co.
Copper & Brass Sales, Inc.
Osco Steel Co.
U.S. Steel Supply Div.—United States Steel Corp.

DALLAS, TEXAS
Delta Metals, Inc.
Earle M. Jorgensen Co.

DENVER, COLORADO
ABC Metals Corp.

DETROIT, MICHIGAN
Copper & Brass Sales, Inc.
Alloy Steels, Inc.

GRAND RAPIDS, MICHIGAN
Copper & Brass Sales, Inc.

HIALEAH, FLORIDA
Fullerton Metals Co.

HONOLULU, T. H.
Honolulu Iron Works
Permanente Cement Co.

HOUSTON, TEXAS
Earle M. Jorgensen Co.
Standard Brass & Mfg. Co.

INDIANAPOLIS, INDIANA
Hubbell Metals Inc.
F. H. Langsenkamp Co.

KANSAS CITY, MISSOURI
Hubbell Metals Inc.

LITTLE ROCK, ARKANSAS
Delta Metals, Inc.

LOS ANGELES, CALIFORNIA
Baker Steel & Tube Co.
Eureka Metals Supply Co.
Earle M. Jorgensen Co.
Reliance Steel & Aluminum Company
U.S. Steel Supply Div. — United States Steel Corp.

LOUISVILLE, KENTUCKY
Hubbell Metals Inc.

MEMPHIS, TENNESSEE
Hubbell Metals Inc.

MILWAUKEE, WISCONSIN
Fullerton Metals of Wis., Inc.
Keystone Pipe & Supply Co.
Korhumel Steel & Aluminum Corp. of Wis.

MINNEAPOLIS, MINNESOTA
Korhumel Steel & Aluminum Co.

NEW ORLEANS, LOUISIANA
Standard Brass & Mfg. Co.

NEW YORK METROPOLITAN AREA
Chase Brass & Copper Co.
T. E. Conklin Brass & Copper Co., Inc.
A. R. Purdy Company, Inc.
U.S. Steel Supply Div.—United States Steel Corp.,

OAKLAND, CALIFORNIA
American Brass & Copper Co.
Gilmore Steel & Supply Co.
Earle M. Jorgensen Co.

PHILADELPHIA, PENNSYLVANIA
Hill-Chase & Company, Inc.

PITTSBURGH, PENNSYLVANIA
William M. Orr Co., Inc.

PORT ARTHUR, TEXAS
Standard Brass & Mfg. Co.

PORTLAND, OREGON
Eagle Metals, Inc. of Oregon
U.S. Steel Supply Div. — United States Steel Corp.

SAN FRANCISCO, CALIFORNIA
Gilmore Steel & Supply Co.
Earle M. Jorgensen Co.
U.S. Steel Supply Div. — United States Steel Corp.

SEATTLE, WASHINGTON
Eagle Metals Company
U.S. Steel Supply Div. — United States Steel Corp.

SHREVEPORT, LOUISIANA
Standard Brass & Mfg. Co.

SPOKANE, WASHINGTON
Eagle Metals Company

ST. LOUIS, MISSOURI
Hubbell Metals Inc.
U.S. Steel Supply Div. — United States Steel Corp.

ST. PAUL, MINNESOTA
U.S. Steel Supply Div. — United States Steel Corp.

TULSA, OKLAHOMA
Earle M. Jorgensen Co.

WATERBURY, CONNECTICUT
Hawkridge Bros. Co.

WICHITA, KANSAS
General Metals, Inc.

You name it—trains, planes, trucks, ships—and Northeast Ohio—The Best Location in the Nation has it. Five major railroad systems reach all parts of the country. Twelve certified airlines provide excellent air transportation facilities. 128 trucking companies, plus the Ohio Turnpike, make over-the-road shipping convenient and fast. 30 domestic and 17 foreign ship lines use the excellent ports of Cleveland, Ashtabula, Fairport and Conneaut.

We'd like to tell you more about transportation in Northeast Ohio—and about the dozens of other advantages The Best Location in the Nation offers as a prospective site for your plant or business headquarters.

We carefully study all phases of business in Northeast Ohio and constantly revise our information to keep abreast of the vast expansion now taking place and of the future possibilities it offers.

If you want the most authoritative, the most complete and the newest information about your future in The Best Location in the Nation write today to Richard L. DeChant, Mgr., Area Development Dept., Room 440, The Cleveland Electric Illuminating Company, The Illuminating Building, Cleveland, Ohio. Free booklets on "Water," "Chemicals," "Transportation," "Research," are available. Also comprehensive report: "Production Center for Defense."

THE CLEVELAND ELECTRIC ILLUMINATING COMPANY
IN THE BEST LOCATION IN THE NATION

ADMINISTRATION

technical personnel keep abreast of day-to-day management techniques and work problems. The newsletter, published by Vision Inc. (New York), will cover such topics as group leadership, personnel evaluation, gift ideas, bridge tips and other subjects "of a management, personal and social nature."

LABOR

Du Pont Negotiations: Management at Du Pont's Niagara Falls, N.Y., plant and members of the plant's independent union will begin negotiations next week on a 15¢/hour wage increase demand.

Chairman of the Niagara Plant Employees Union, Owen Muffler, said that under the wage reopening clause in its contract the independent local is joining 17 other plant unions across the country in seeking wage hikes.

•

Plastic Firm Shutdown: Claiming that he is forced to go out of business because his employees refused to take a pay cut, the president of a 25-year-old Fairfield, Conn., plastics company has announced plans to "liquidate and sell our machinery as fast as possible" to meet debts.

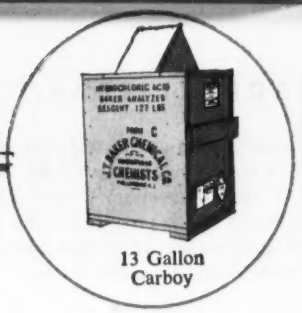
Lancaster Clark, Jr., said his 100 employees, members of Local 25 of the Leather Goods, Plastics and Novelty Workers Union, voted against the firm's proposal that they take a 25% pay cut until the company got into the black. Part of the proposal, Clark said, was that a profit-sharing system would be inaugurated for employees, once the company was making a profit again.

Clark said competitors paying lower wages had cut prices to a level he cannot reach.

LEGAL

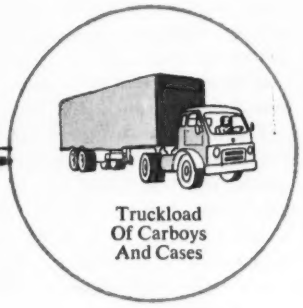
New York Pollution Program: New York's state senate is considering a bill, already passed by the assembly, that would create an air-pollution-control program covering the New York and New Jersey metropolitan areas.

The measure would set up a control district empowered to set and enforce atmospheric standards. Under a New York-New Jersey air-pollution compact, the control district would be administered by the existing Inter-



13 Gallon Carboy

6½ Gallon Carboy



Truckload Of Carboys And Cases

Thro-A-Way Bottles And Case

Returnable Bottles And Case

Baker REAGENT ACIDS

Uniform high purity . . . any quantity . . . in the container of your choice

ALL J. T. BAKER REAGENT GRADE ACIDS—regardless of container or quantity—conform to stringent specifications. Every lot—regardless of end use—is subject to rigid controls established by J. T. Baker Chemical Co. to assure you of the highest standards of purity in the industry.

WHY J. T. BAKER REAGENT GRADE ACIDS FOR LARGE-SCALE PRODUCTION USE? Because they combine the advantages of controlled high purity and economy. Because they do an efficient, faster, more predictable job in industry upon industry. Investigate J. T. Baker acids to help you reduce testing time . . . eliminate one or more purification steps . . . minimize variables . . . cut costs without sacrifice of quality or control . . . upgrade your product.

HOW PURE ARE J. T. BAKER REAGENT GRADE ACIDS? Specifications for J. T. Baker Nitric, Sulfuric, Hydrochloric and Acetic Acids and for Ammonium Hydroxide appear below. See how they might work for you.

WHAT CONTAINER TYPES ARE AVAILABLE? 6½ and 13 gallon carboys; Thro-A-Way bottles and cases (6 five pint bottles per case); returnable bottles and cases (10 five pint bottles or 24 one pound bottles per case). Whatever quantity you need—pounds or tons—J. T. Baker offers you highest standards of purity—on-time shipment—economical price.

J. T. Baker Chemical Co.

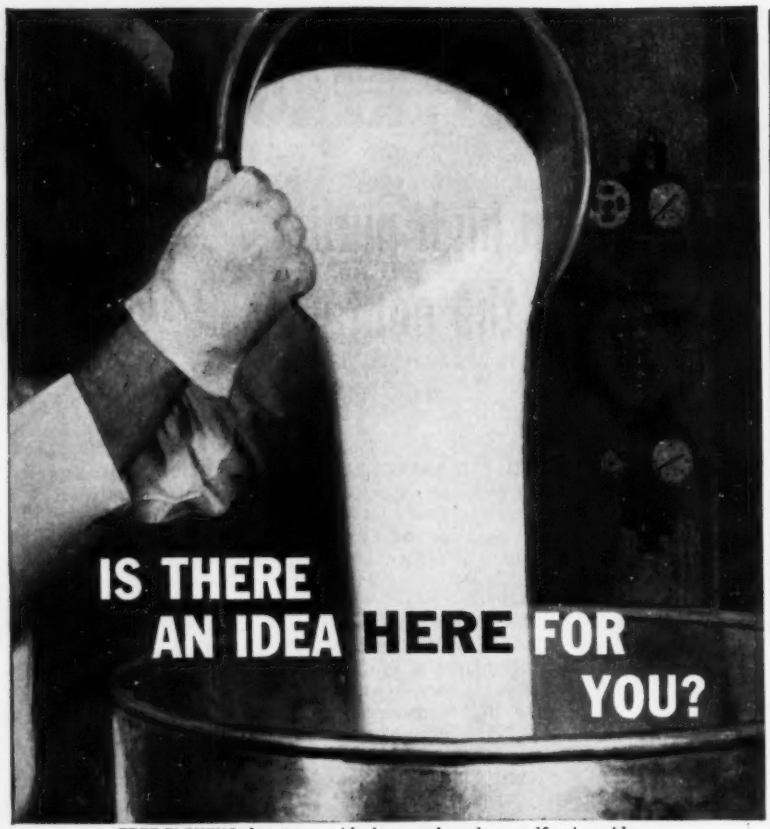
REAGENT • CHEMICAL • FINE • INDUSTRIAL

Phillipsburg, New Jersey

BAKER REAGENT SPECIFICATIONS

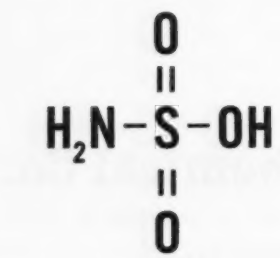
	Acetic Acid, Reagent, Glacial *($HC_2H_3O_2$) Meets A.C.S. Specifications	Hydrochloric Acid, Reagent *(HCl) Meets A.C.S. Specifications	Nitric Acid, Reagent *(HNO_3) Meets A.C.S. Specifications	Sulfuric Acid, Reagent *(H_2SO_4) Meets A.C.S. Specifications	Ammonium Hydroxide, Reagent *(NH_4OH) Meets A.C.S. Specifications
Assay (as *)	99.8%	36.5-38.0%	69.0-71.0%	95.0-98.0%	28.0-30.0%
Residue After Evaporation or Ignition	0.0010%	0.0004%	0.0004%	0.0004%	0.001%
Carbon Dioxide (CO_2)	–	–	–	–	0.002%
Chloride (Cl)	0.0001%	–	0.00005%	0.00001%	0.00005%
Phosphate (PO_4)	–	–	–	–	0.0001%
Sulfate (SO_4)	0.0001%	0.0001%	0.0001%	–	–
Sulfite (SO_3)	–	0.0001%	–	–	–
Total Sulfur (as SO_4)	–	–	–	–	0.0001%
Substances Reducing Permanganate	**PACST	–	–	0.0001%	**PACST
Nitrate	–	–	–	<0.00005%	–
Ammonium (NH_4)	–	0.0003%	–	0.0001%	–
Arsenic (As)	–	0.000001%	0.000001%	0.000001%	–
Heavy Metals (as Pb)	0.00005%	0.0001%	0.00002%	0.0001%	0.00005%
Iron (Fe)	0.00002%	0.00001%	0.00002%	0.00002%	0.00001%
Copper (Cu)	0.00005%	0.00005%	0.00005%	0.00005%	–
Nickel (Ni)	0.00005%	0.00005%	0.00005%	0.00005%	–
Specific Gravity	–	1.185-1.192	1.416-1.424	1.84	0.902-0.896
Free Chlorine	–	0.0001%	–	–	–
Substances reducing $K_2Cr_2O_7$	PT	–	–	–	–

* Passes A.C.S. Test.



FREE-FLOWING dry-type acid cleaners based on sulfamic acid are easy to handle . . . dissolve quickly in water . . . create no fumes.

DU PONT SULFAMIC ACID has high strength, low corrosive action...forms extremely soluble salts



SULFAMIC ACID is a white crystalline or granular solid acid comparable to sulfuric in strength. It forms extremely soluble salts—usually more soluble than the corresponding nitrate, chloride or sulfate salts.

What can *you* do with a dry acid that's nonvolatile, non-hygroscopic and is almost as strong as sulfuric?

Some chemists find sulfamic acid an excellent chemical for scale-removal compounds, because it is dry, has high strength, low corrosive action, forms extremely soluble salts; and dry or in solution it causes no fumes.

Others find it a good curing agent for phenolics and UF resins, because it is faster-acting than organic acids . . . reduces the objectionable effects encountered with other inorganic acids.

Still others save processing costs by employing fast-acting sulfamic acid to remove excess nitrite used in diazotization reactions in the manufacture of dyes and pigments.

Your use for Du Pont sulfamic acid may be one of these, or a new profitable use tailored to your own needs. Be sure you evaluate this unusual dry acid in terms of your own product development work! Just write to address given below for more information.

DU PONT
REG. U. S. PAT. OFF.

▶ Write for this free 30-page booklet describing the properties and uses of sulfamic acid. E. I. du Pont de Nemours & Co. (Inc.), Grasselli Chemicals Department, N-2543 Wilmington 98, Del.

BETTER THINGS FOR BETTER LIVING . . . *THROUGH CHEMISTRY*

ADMINISTRATION

state Sanitation Commission.

Connecticut, as the third member of the commission, would have to consent to the program before it took effect, but would not have to participate unless it wanted to.

•

Severance Taxes: Two states stand prepared to provide severance tax relief for local industries. (Severance tax is a levy on the value of materials, such as oil and minerals, withdrawn from the soil.)

Arkansas' legislature has passed a bill granting severance tax credits to oil operators that install salt-water removal systems at their wells. The salt water would be reinjected into the earth to avoid stream pollution, for some years a source of controversy in river watersheds in south Arkansas and north Louisiana.

In New Mexico, the state legislature is considering a bill that would ease some of the severance tax burden shouldered by the state's potash industry. The bill would set the severance value of potash at 75% (instead of 100%) of the market price of the commodity. It's estimated that this would save the slumping industry $150,000-200,000/year in severance, according to sponsors of the measure.

KEY CHANGES

George B. Coale, Graham W. Corddry to directors, National Lead Co. (New York).

O. N. Miller to director, Standard Oil Co. of California (San Francisco).

J. Carlton Ward, Jr., to board chairman; **William H. Denne, Jr.,** to director; **William B. Hall,** to director and president; **Frank B. Jewett, Jr.,** to executive vice-president; **Raymond T. Ruder,** to treasurer; Heavy Minerals Co. (Chattanooga, Tenn.).

Albert L. Williams to director, Allied Chemical Corp. (New York).

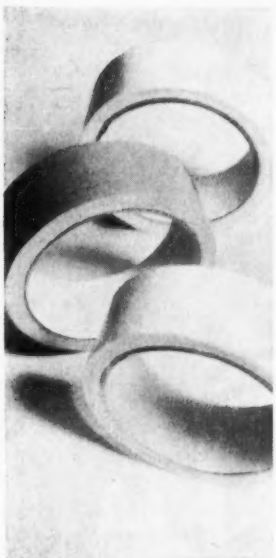
Edward O. Vetter to executive vice-president, Metals & Controls Corp. (Attleboro, Mass.).

Robert W. Pressing to general manager, New Products Dept.; **George H. Wagner** to director of research; Linde Co., division of Union Carbide Corp. (New York).

VINYLPYRROLIDONE

A liquid vinyl monomer that copolymerizes readily with other resin-forming monomers.

IMPROVES MANY POLYMERIC PRODUCTS

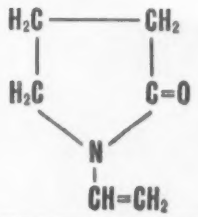


Adhesives:

When copolymerized with vinyls, acrylics, or maleates, Vinylpyrrolidone increases molecular adhesion to many surfaces. It offers a new approach to oil- and grease-resistant heat-seal adhesives, pressure-sensitive adhesives, and adhesives that bond nylon to nylon, urethane foam to wood, aluminum foil to paper, etc.

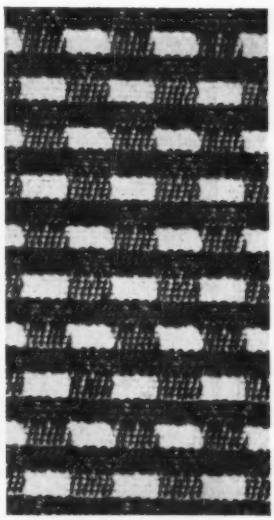
Coatings & Finishes:

Temporary decorative aerosol paints formulated with copolymers of Vinylpyrrolidone stick readily to metal, glass and other nonabsorbent surfaces, but are easily washed off. Vinylpyrrolidone-Acrylic copolymers have excellent emulsifying and dispersing action in polymer paints and are suggested for improved wetting of the pigment.



Lube-Oil Additives:

Copolymers of Vinylpyrrolidone and acrylates or maleates contribute detergency and surface activity and improve viscosity index.



Synthetic Fibers:

Vinylpyrrolidone increases the dye affinity of acrylic fibers and improves moisture regain and hand.

Textile Sizes:

Modified copolymers of Vinylpyrrolidone and maleates or acrylics have characteristics which suggest their use in textile sizes or water repellents. Similar copolymers are worth evaluation in printing and padding.

For more detailed information about Vinylpyrrolidone, write for our 24-page technical bulletin.

ANTARA gaf

From Research to Reality

ACETYLENE CHEMICALS DEPARTMENT

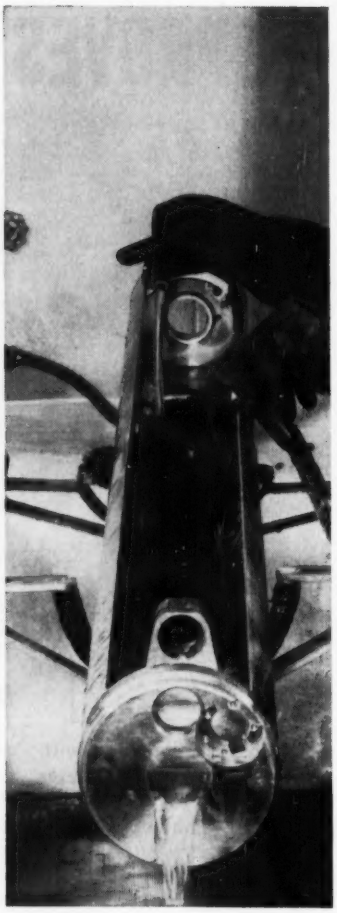
ANTARA CHEMICALS

A SALES DIVISION OF

GENERAL ANILINE & FILM CORPORATION

435 HUDSON STREET • NEW YORK 14, NEW YORK

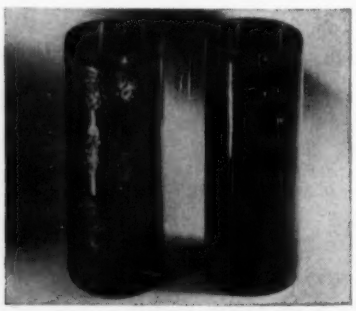
FLUI



FLUIDICS AT WORK

More thermal shock data on new Glasteel 59

We glassed the outside of two 2-inch steel pipes, one with Glasteel 59 (below right) and one with the best previous material, #53 Glass (left).



Then we heated both to 525°F. and quenched them quickly in a 70°F. bath. The picture at left shows what happened. Glasteel 59 shows not a bit of damage . . . in spite of a 455°F. instantaneous thermal shock.

In other tests we heated Glasteel 59 to 600°F. and gave it a 530°F. shock and then to 625°F. for a startling 555°F. shock. There still was no sign of cracking or crazing or other damage on the sample pipe.

Naturally we do not recommend such severe treatment for your equipment; but we do recommend Glasteel 59 as offering the greatest protection against thermal shock damage.

Circle "A" on the coupon for more information on this new material.

FLUIDICS AT WORK

Washing away radioactivity with ion exchange

Was a time when $30,000 control rod drive housings like this were buried because of radioactivity.

Now the contamination is scrubbed off and the parts are reclaimed with the help of a Permutit nuclear purifier. Each refill of 3 cu. ft. of ion exchange resin in this unit decontaminates thousands of gallons of rinse water.

For more information on this process and its other uses in nuclear work, circle "B" on the coupon.

DICS

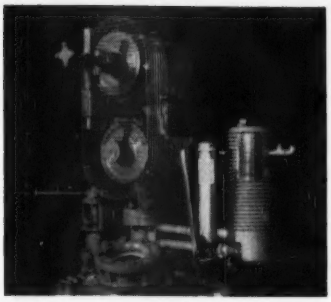
is a Pfaudler Permutit program providing the know-how the equipment and the experience for solving problems involving fluids.

FLUIDICS covers such varied phases of fluid handling and control as:

corrosioneering
water treatment
waste treatment
reactions
polymerization
ion exchange
fluid analysis
agitation
evaporation
distillation
drying
blending
metering
valving
flow rate control
piping
storing
centrifuging
filling
heat transfer, etc.

Whenever you have a fluid-handling problem, look to this Pfaudler Permutit FLUIDICS program for the best solution.

75 YEARS CREATING FOR TOMORROW Pfaudler



FLUIDICS AT WORK

New W Drive packs a lot of power at low cost

Fluid agitation is an important phase of the FLUIDICS program. Witness this compact, relatively inexpensive worm drive that carries up through 10 hp.

Its pedestal mount is easily adapted to any tank design, even open vessels. The drive usually carries a Glasteel impeller, so it's ideal for corrosive work. Alloy impellers and turbines are also available.

Maintenance on the W Drive consists almost entirely of routine lubrication and periodic alignment checks.

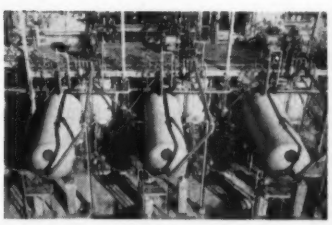
It takes either stuffing box or mechanical seal. Fixed speed or variable speed sheaves are standard. You can specify hydraulic, explosion-proof design.

For details, circle "C" on the coupon.

SPEED RANGE WITH VARIABLE SPEED SHEAVES

Drive Ratio	2.5W		3W	
	HP at Max. Speed	Agit. RPM Range	HP at Max. Speed	Agit. RPM Range
5:1	2	600 to 128	3	600 to 128
10:1	2	300 to 64	3	300 to 64
20:1	2	150 to 33	3	150 to 33
30:1	1.5	100 to 22	2	100 to 22

Note: There are 4W and 5W drives which deliver 7.5 and 10 HP respectively in comparable speed ranges.



FLUIDICS AT WORK

Phillips Petroleum uses Glasteel for processing natural gas liquids

$AlCl_3$ and HCl, highly corrosive catalysts used to process natural gas liquids, are kept in check at Phillips Petroleum with Glasteel . . . in reactors, tanks, and towers. Performance is so successful, Phillips is now building a second all-Glasteel plant. Circle "D" on coupon for the facts on the full line of Glasteel equipment.

PFAUDLER PERMUTIT INC. Pfaudler Div., Dept. CW-39, Rochester 3, N.Y.

Circle item wanted: A, B, C, D.

Name.....

Title.....

Company.....

Address.....

City.....Zone.....State.....

Foreign Patent Picture: A variety of technicalities,

	*Member of Convention**	*Public Opposition to Grant Permitted*	*Patent Must Be Worked Within*	*Novelty Examination*
Argentina	No	No	2 years	No
Australia	Yes	No	3	Yes
Austria	Yes	Yes	3	Yes
Belgium	Yes	No	3	No
Brazil	Yes	Yes	2	Yes
Canada	Yes	No	No rule	Yes
Czechoslovakia	Yes	——	3	Yes
Denmark	Yes	Yes	3	Yes
East Germany	No	Yes	3	Yes
France	Yes	No	3	No
West Germany	Yes	Yes	No rule	Yes
Great Britain	Yes	Yes	3	Yes
Hungary	Yes	Yes	3	No
Italy	Yes	No	3	No
Israel	Yes	Yes	3	Yes
Japan	Yes	Yes	3	Yes
Mexico	Yes	No	3	No
Netherlands	Yes	Yes	5	Yes
New Zealand	Yes	Yes	3	Yes
Norway	Yes	Yes	3	Yes
Spain	Yes	Yes	3	No
Sweden	Yes	Yes	3	Yes
Switzerland	Yes	Yes	Varying limit	Yes
U. of South Africa	Yes	Yes	No rule	Yes

Note: Iron Curtain countries have patent systems; but special approval of U.S. government is required to file applications there. *The International Convention for the Protection of Industrial Property, also called "Patent Convention."

Time to Take a Second Look at

U.S. CPI firms should be re-evaluating the foreign patent situation —readying for changes in overseas handling, protecting their inventions.

Reason: the changing political and economic face of foreign marketplaces will undoubtedly mean new procedures, changes in the status of existing foreign patents.

Chemical patent experts are keenly watching three areas:

• *Europe*—Euromart, the "Common Market," allows for manufacture of an item in the most economically advantageous location. According to S. Delvalle Goldsmith, partner in Langner, Parry, Card and Langner (New York and Chicago), foreign patent authorities, this may lead to relaxation of "working" requirements on existing patents. There's an outside chance that a European common patent office may be in the offing, too. Major objection to such an office is that the participating nations would lose important tax revenue. But an agreement might be worked out whereby (upon payment of the applicable taxes) a patent registerable in one country may also be registered in other member countries.

• *Africa*—The creation of independent republics from ex-colonies (e.g., Ghana), coupled with a desperate need for industrialization, will foster new patent offices. Consolidation of small nations into confederations may, on the other hand, eliminate some patent offices. Result:

plus low filing fees and graduated taxes

Term of Patent	*Filing and Issue Fees $*	*Total** Taxes $*
5-15 years	4.50	4.50
15	26.	284.
18	10.	743.
20	6.	609.
15	4.	24.
17	60.	None
15	13.	581.
17	25.	482.
18	—	—
20	17.	282.
18	26.	2435.
16	22.	462.
20	9.	1326.
15	9.	211.
16	70.	—
15	6.	94.
15	19.	58.
18	46.	911.
16	22.	95.
17	25.	584.
20	7.	90.
17	40.	710.
18	14.	589.
16	14.	109.

**The total cumulative taxes a patentholder would pay to maintain the patent for its entire term. They gradually increase with the age of the patent.

Foreign Patents

possible loss of present rights, an imminent need for additional filing.

• *South America* — Most South American nations are not members of the Patent Convention,* offer relatively poor protection to U.S. inventors. But an apparent trend to democracies renews hope that U.S. industry can invest in South America without fear of loss by expropriation. The next step, to improve patent protection, is a must, if U.S. money is to flow south; and the South American governments are aware of this.

But, generally, chemical firms have not yet prepared for these changes. Jim Archer, head of American Cyanamid's patent office, says, "So far it has been an evolutionary problem, so we have handled situations as they have arisen." Several other major CPI firms anonymously comment: "We are aware of the situation, haven't decided what to do about it."

One CPI firm that has gone all out to keep tabs on the foreign patent situation is American Viscose Corp. (Philadelphia). Viscose's patent development department continuously services the firm's foreign patents. Patent attorney Worth Wade, who heads the department, cites three key requirements of a sound program: "(1) determine countries in which patent protection is of prime importance and those in which patents are of secondary importance; (2) have a scheme for deciding when to patent and when not to patent; (3) organize to service and utilize the patent to the fullest."

Whether to Patent: U.S. chemical companies should consider patenting overseas only those inventions that have a definite use in the U.S. and at least a fair chance of use abroad.

Patent seekers should also be aware of the following:

• Prepublication of information in the patent application is dangerous. Many firms feel that after a U.S. patent application has been filed they may permit publication of the disclosures (U.S. law allows valid filing within one year of publication). Not so, if they have plans for acquiring foreign patent protection. Many countries (e.g., Sweden, France, Italy) deny a patent if publication (anywhere) exists before the first filing in that country. Therefore, publication before filing, at least in the U.S., is not recommended.

• Many applications overseas fail because they have not been accurately translated or have not been correctly written in the format required by the foreign laws.

• Often, U.S. companies have applied for patents overseas, only to find that the process is protected, but not the product. This common foreign practice is based on the theory that it is against the public welfare to grant a monopoly on a chemical or pharmaceutical product *per se*.

• Foreign patents (or printed copies of the application) often are issued quite early, in comparison with U.S. patents. They provide a "window on the chemical world" for competitors.

The Patent Convention is subscribed to by most countries in which U.S. firms seek patents (*see chart*). Major advantage of this international agreement is that members are grant-

*The International Convention for the Protection of Industrial Property.

ESTERS FOR INDUSTRY
Since 1921

PIONEER

Kessler Chemical Company, since 1921, has pioneered in the development and production of **industrial organic esters.**

Today, Kessler products cover a wide range of physical properties and molecular weights. Among these you should find the one with the exact properties you require. If not, **ask us about making an ester to your specifications.**

Thirty-seven years of experience in this field is a priceless background. Why not take advantage of it?

Call or write our Technical Service Laboratory, outlining your problem

KESSLER CHEMICAL CO., Inc.
State Road and Cottman Avenue
PHILADELPHIA 35, PENNA.

KESSLER CHEMICALS

UW PHOTO—LIONEL CRAWFORD

Avisco's Wade sees new profit possibilities in foreign patents.

ed a one-year period of grace after filing in any member country, during which they may file in any other member country, still get the benefit of the earlier filing date. The agreement also allows for equal treatment of foreign applicants and home nationals.

• Taxes—Unlike the U.S., most countries make a continuing charge for the privilege of protection within their borders; Canada is a prominent exception. And the taxes, after initial filing costs, usually increase year by year, making it essential to continually re-evaluate the patent in relation to the cost of upkeep.

• Novelty requirements — The U.S. and a few foreign countries (e.g., Great Britain, Canada, Holland, West Germany, Sweden) require a technical examination for novelty, virtually all others do not have novelty examinations. In such an instance, two applicants may get patents on the same invention, from the same country—the earlier filing has prior rights in case of a dispute.

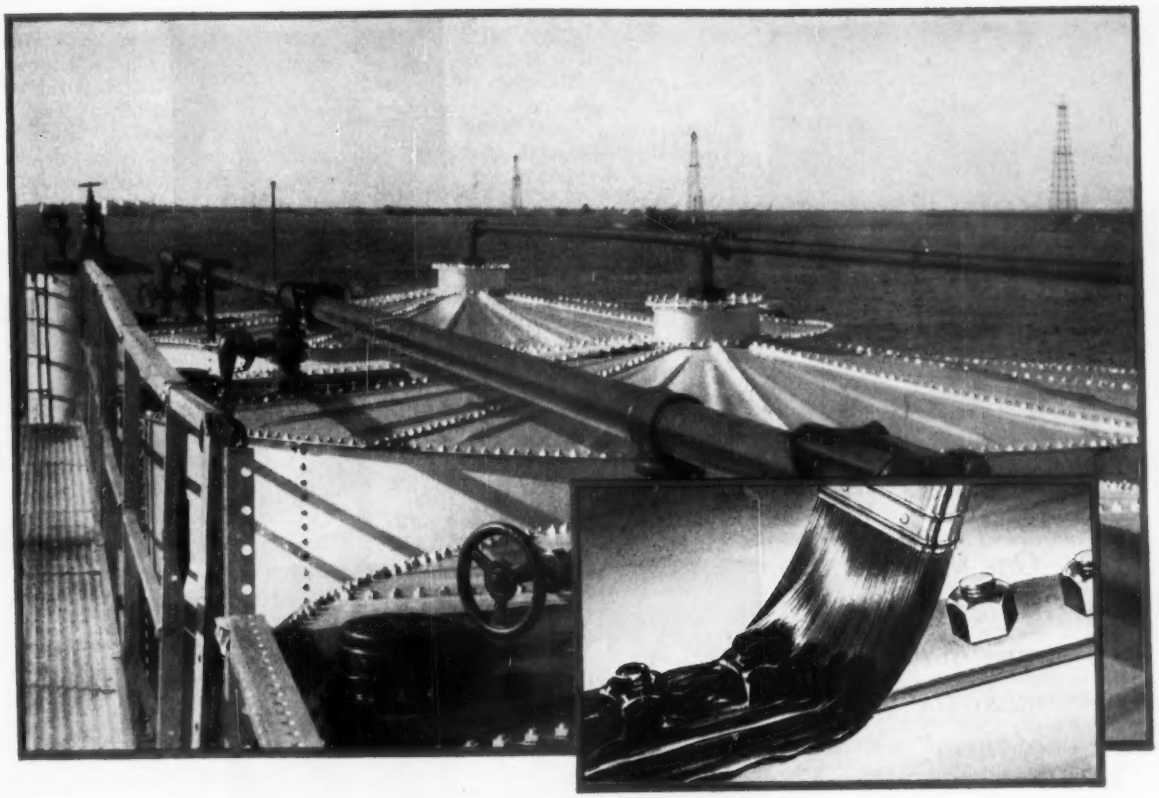
• Working requirements — In most foreign countries, patents that are not "worked"—actually used by the owner or his licensee—may be revoked, or subjected to compulsory licensing.

• Public opposition to grant—This procedure permits parties to file adverse claims against a patent application during a specified period before the grant comes up for approval *(see chart, pp. 48-49)*.

Smart to Service: Avisco's Wade who has pushed the foreign patent servicing idea cites licensing of patents to foreign producers as a good income producer (at little cost). A recent U.S. Dept. of Commerce survey showed a $40-million licensing return to the U.S. CPI in '57.

Other reasons for careful servicing of foreign patents include: protection of foreign manufacturing operations; protection of export sales to the foreign country; value in cross-licensing (that is, where U.S. and foreign firms "exchange" rights to patents each holds).

The foreign patent picture is changing. By reevaluating their position, adjusting to changing laws and alignments, CPI firms may find opportunities to turn patent deadwood into dollars.



For leak-proof, trouble-free storage tanks...

SEAL WITH THIOKOL POLYSULFIDE RUBBER SEALANTS

Bolted tank construction – steel or aluminum – sealed with THIOKOL polysulfide type sealants is providing the happy solution to more and more storage tank problems in the petroleum field.

These superior sealants come in liquid form, apply easily and cure rapidly to a tough adhesive rubber. They stand guard against leakage of oil and its by-products . . . stand up to gasoline, moisture, temperature extremes and other deleterious elements. They do not contaminate stored fuels.

One application of THIOKOL polysulfide type sealants to bolts, seams, and joints produces a positive, durable seal that can last as long as the tank itself.

It prevents rust and corrosion at critical joint areas, too––and in the case of portable installations, makes tank dismantling and re-assembling far easier. Overall maintenance costs come down . . . time and labor savings move up.

Because THIOKOL *polysulfide rubber shows outstanding resistance to most aliphatic and aromatic solvents, and is relatively unaffected by aging, weathering, sunlight and ozone, it is meeting many critical needs in the petroleum industry. For the full story of how* THIOKOL *polysulfide rubber serves you better, mail the coupon.*

FOR MORE INFORMATION, mail coupon to Dept. 21, Thiokol Chemical Corporation, 780 North Clinton Ave., Trenton 7, New Jersey.

Gentlemen: Please send me further details about THIOKOL *polysulfide rubber sealants in the petroleum industry.*

Firm_____

Street_____

City_____ State_____

Your Name_____

Thiokol®
CHEMICAL CORPORATION

780 NORTH CLINTON AVENUE • TRENTON 7, NEW JERSEY

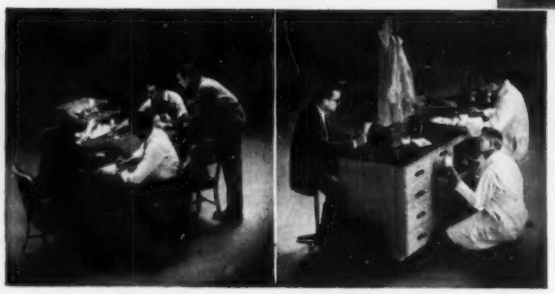
In Canada: Naugatuck Chemicals Division, Dominion Rubber Co., Elmira, Ontario

®Registered trademark of the Thiokol Chemical Corporation for its liquid polymers, rocket propellants, plasticizers and other chemical products.

Polyol portraits:

GLYCERINE

One in a series by "the men that make the most of them"



Dow's increased capacity for producing synthetic glycerine has helped to alleviate the erratic supply of this important commodity. This has stabilized the price of glycerine. Though its commercial history spans more than 175 years, it first stood on its own feet as a product (rather than a by-product of the soap industry) when produced synthetically in 1947. Since then it has had a new extension of usefulness. In addition to stabilizing the supply of an important commodity, synthetic glycerine brought with it the purity made possible by its chemical production. It deserves to sit for the first "portrait" in this series, because it is the prototype product from which stems today's ever-widening family of the polyols.

Portrait of one of the most valuable formulas in the working vocabulary of creative chemistry.

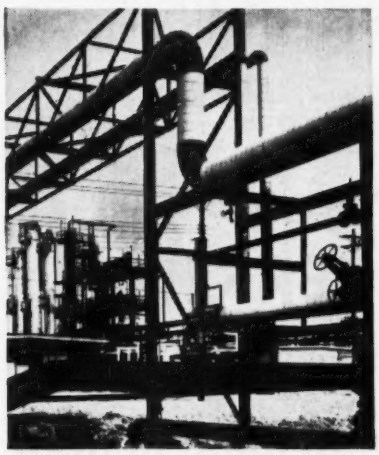
The chemical facts, of course, are well known. Glycerine is the simplest trihydric alcohol. Physically it is colorless and odorless; a somewhat viscous liquid. The secret of its versatility: one secondary and two primary hydroxyl groups. Though the primary hydroxyls are more reactive than the secondary, reaction is characteristic of all three groups.

And one or more of the three hydroxyl groups can be replaced by other groups, such as alkyl radicals or halogens. Since a different type of group can be introduced into each of these positions, an unusual number and variety of derivatives can be formed. Typical of many useful types of glycerine reactions possible are: esterification with either organic or inorganic acids, polymerization, etherification, amination, and reaction with alkali metal hydroxides.

Physical talents, too, account for the many millions of pounds of glycerine that go into non-chemical uses. Here it functions as plasticizer, humectant, solvent, bodying agent, and lubricant, in a variety of product roles. Generally no chemical combination

GARNETT

takes place in such applications, and chemical stability is a prerequisite in the material used to impart specific physical properties. Glycerine is "made to order". It stays free from objectionable color, odor or taste almost indefinitely. Along with its stability, other talents pressed into service in varying combinations include its hygroscopicity, low volatility, solvent power and solubility, high viscosity, noncrystallinity, low toxicity, compatibility, and taste (sweet and pleasant).



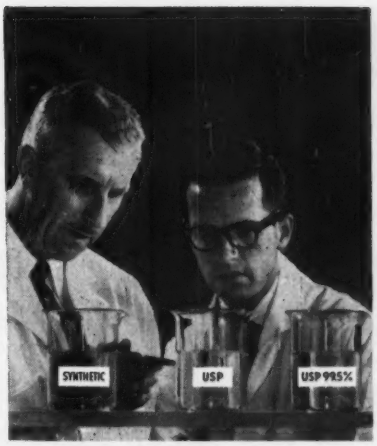
The big Dow plant at Freeport, Texas—first went on stream with Glycerine, Synthetic in 1955.

The Glycerines from Dow are three: *Glycerine, Synthetic* is the indicated choice in nearly all industrial applications. It was the first to go on stream at the big Dow plant at Freeport, Texas. Next came *Glycerine, USP,* to meet U.S. pharmacopoeia requirements, including glycerol content of 95%. Dow's quality runs, in fact, 96%—a strength many users wish because the viscosity is considerably below that of 99.5%, it is easier to handle, and does not freeze easily. Color is water-white for uses requiring high purity with taste and odor characteristics desirable for pharmaceutical and food uses (as well as for lighter colored alkyd resins in paints). And *Glycerine, USP 99.5%* – preferred by customers who find the 4% water in *USP* undesirable in their processes. It is identical with *USP* except that glycerol content is a minimum of 99.5% instead of 96%.

The basic fact behind the new stability of quality and supply that Dow's synthetic production has helped bring to the glycerine market is this . . .

Dow is Basic in Polyols—
in glycerine, as well as in the whole wide range of polyols it manufactures.

TRANSLATION: Whether in the well-known categories of the glycerines, the industrial glycols, the polyethylene glycols, the polypropylene glycols, or in the more venturesome developmental range of its "world's widest line of polyols", Dow makes *all* of the ingredients that go into the production of these polyols.



Three good ways to go in Dow Glycerine—every one of them *clearly* right.

To the buyer of chemicals the phrase "Dow is basic" means assurance of highest quality that can result only from complete control of all the building blocks that go into a polyol formulation. It means assurance of uninterrupted supply, because the manufacturer is an *original* source—completely independent of raw material problems. It means stable prices because ingredient costs are not subject to wide market fluctuations. And, in the realm of creative chemistry it means that there are literally *no material limits* to the range of polyol possibilities and improvements that are open to Dow and its customers.

* * *

Dow's "men that make the most of them" stand ready to help you make the most of the polyol products you need. The skillful team of scientists, technicians, production experts, sales force, in the course of their work, have acquired the knowledge you need to know about polyols. With them, the production and delivery of polyols are only the beginning. Their greatest pride and satisfaction come from following through to help you make the most of polyols in *your* applications. They are always at your service. If you have a polyol problem, why not call them . . . through the Dow sales office nearest you? Or write Chemicals Sales Dept. 1100 AM3-14.

THE POLYOL FAMILY TREE

main branches include **Glycerine • Glycerine USP 99.5% • Propylene Glycol • Dipropylene Glycol • Ethylene Glycol • Diethylene Glycol Polyethylene Glycols • Polypropylene Glycols • Tripropylene Glycol Tetraethylene Glycol • Hyprose® SP80 • Hyprin® GP25 • Polyglycol 11 Series • Polyglycol 13 Series • Polyglycol 15 Series Polyglycol 166 Series (Polyepichlorohydrin) • Polyglycol 174 Series (polystyrene glycol) • Polybutylene Glycols • Dowanol® 122 Styrene Glycol**

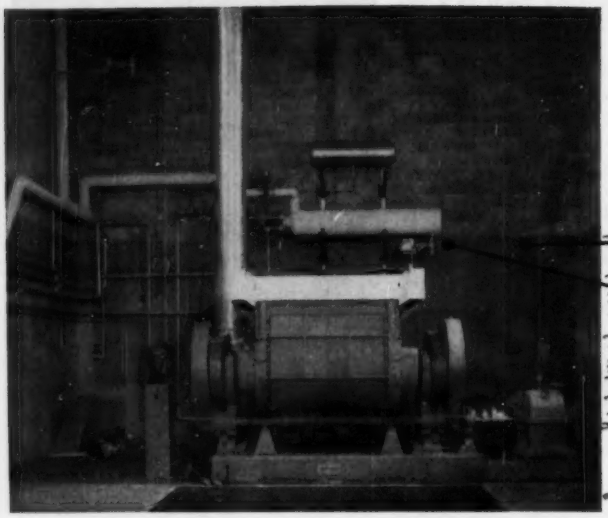
The Industrial Glycols number many active members, among them three new products developed by Dow research—polyepichlorohydrin, polystyrene glycol, and polybutylene glycol. All three are adaptable as intermediates in the production of the new polyurethanes and in the surfactant field. Many promising applications in the paint, petroleum, detergent, plastic industries.

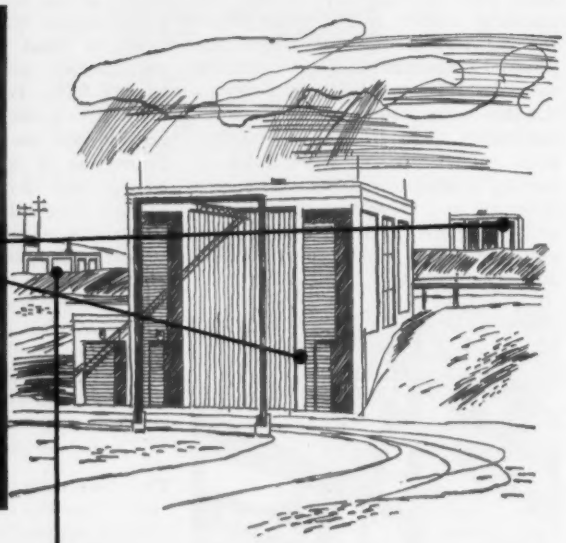
The Polyethylene Glycols are available in twelve molecular weights from E200 to E20,000, and ranging from viscous liquids through waxy and hard tough solids. Very useful as plasticizers, lubricants, solvents and as carriers in cosmetic and pharmaceutical preparations.

The Polypropylene Glycols "P" series liquid through entire molecular weight range, P250 through P4,000. Employed as lubricants, solvents, plasticizers and anti-foam agents. Polyglycol P2,000 (resin grade) has gained widespread acceptance for use in urethane foams.

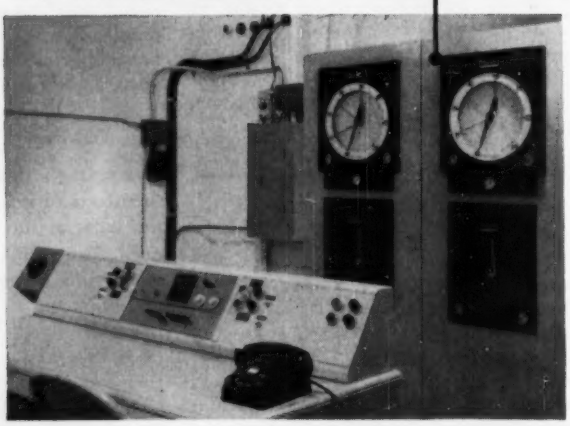
THE DOW CHEMICAL COMPANY
MIDLAND, MICHIGAN

DOW





TWO MORE BAKER PERKINS MIXERS ON THE JOB at new Thiokol® solid propellant plant in Utah

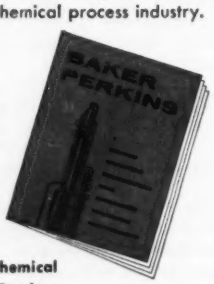


Inorganic oxidizers, the chemicals which make solid rocket propellants burn with such intensity, are first ground to a particle size . . . blended thoroughly . . . then mixed with an elastomeric binder. Fundamentally, that's how Thiokol Chemical Corporation makes a fuel for a rocket motor. The mixing of high energy fuels is a delicate, exacting operation and the mixers must be highly efficient and absolutely dependable.

At the Brigham City, Utah plant, Thiokol has recently installed two more Size 18 JWRM-2 Baker Perkins mixers. Each of these mixers is constructed of stainless steel and has a 300 gallon working capacity. The units, housed in specially constructed buildings, are remote controlled from another building.

Because they are safe *and* efficient, more and more B-P mixers are being used by the rapidly expanding propellant industry. These same high standards of quality are also incorporated into the standard design mixers built for the chemical process industry.

Whatever your requirements may be, Baker Perkins builds mixing machinery to handle every job. Why not write today for Bulletin No. CE-58 containing information on B-P equipment for the chemical process industries.

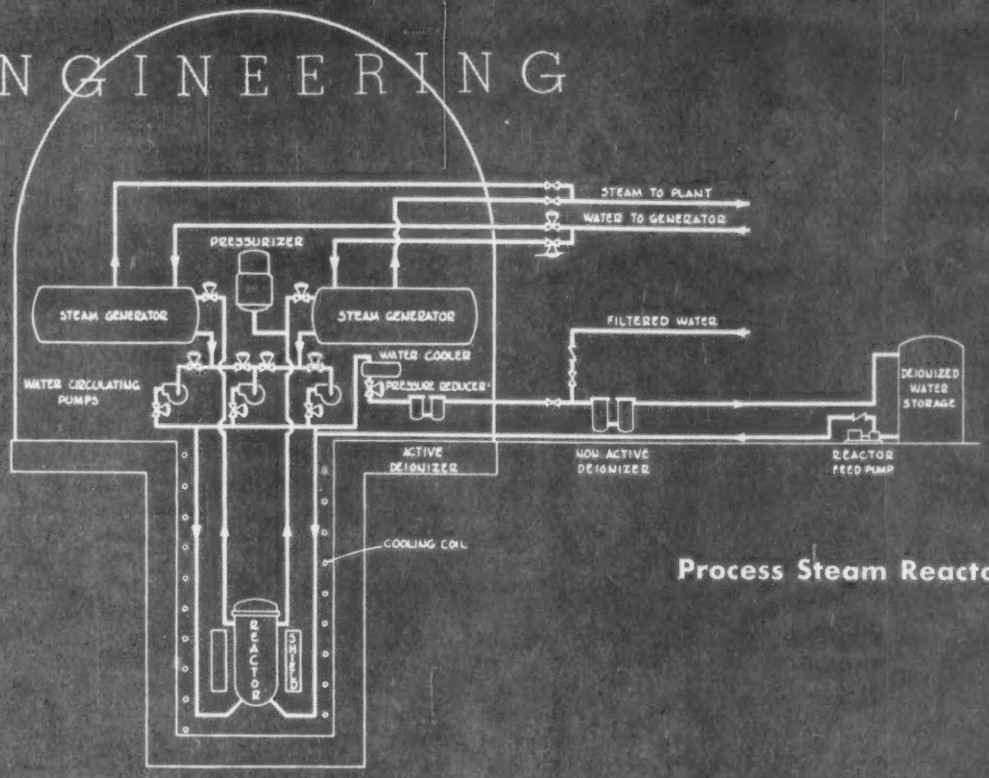


BAKER PERKINS INC.

CHEMICAL MACHINERY DIVISION • SAGINAW, MICHIGAN

See our insert in Chemical Engineering Catalog.

365



Process Steam Reactor

THE CASE FOR NUCLEAR PROCESS HEAT REACTORS

PRO:

- *Lower research and development costs* would be realized by using existing reactor concepts and fuel elements that are suitable for low-pressure, low-temperature steam generation.
- *Smaller financial risk* is required for small-size heat reactors — 40-60-megawatt capacity — than is needed for commercial-scale nuclear electric power plants.
- *Steam costs are only slightly higher* than the cost of steam from conventional generating plants in areas where fossil fuels are relatively expensive.
- *Competitive nuclear electric power* would be hastened by expansion of basic market for nuclear fuels, equipment and reprocessing. Likely upshot: reduction of fuel costs.
- *Existing market is sizable* — estimated at 50-100 nuclear steam plants per year.

CON:

- *AEC subsidy is needed* to enable initial heat reactors to be operated at reasonable cost.
- *Capital cost is high* — at least double that of an equivalent fossil-fueled steam plant.
- *Reactors are unsuitable for generating auxiliary* electric power; also for process heat requirements below the minimum load needed for economic reactor operation.

Rekindling Interest in Nuclear Process Heat

The campaign to push development of nuclear process heat reactors has picked up considerable impetus in the past few weeks.

Spurred by engineering and processing companies' recommendations at the recent hearings before the Congressional Joint Committee on Atomic Energy, the Atomic Energy Commission has decided to include heat reactor projects in its revised third-round demonstration program.

To date, heat reactor development has been largely overshadowed by efforts to develop economically competitive nuclear electric power. But the hard core of experts who have long touted process heat applications are fast gaining support. Reason: heat reactors based on existing design and operating experience now show prom-

GREENS

4 Pure Chromium Oxides

and

2 Hydrated Chromium Oxides

Most stable of the green pigments. Unaffected by acids, alkalis, vehicles, and solvents. Non-fading.

The 4 pure chromium oxides will withstand ceramic temperatures. Use them in applications requiring permanency—enamels, emulsion paints, rubber, plastics, floor coverings, roofing granules, building materials, etc.

Use the 2 hydrated chromium oxides for obtaining brilliant color and transparency in automotive finishes, high grade enamels and lacquers.

Your nearest Williams representative will be glad to provide you with full technical data and samples, or write Dept. 39, C. K. Williams & Co., Easton, Penna.

WILLIAMS
COLORS & PIGMENTS

EASTON, PA. • E. ST. LOUIS, ILL.
EMERYVILLE, CAL.

ise of becoming commercially competitive long before nuclear electric power.

Engineering Firm's Advantage: At last week's hearings, Norman Spector, vice-president of Vitro Corp. of America, recommended that erection of 100-200-electrical-megawatt reactors be left to industry, that AEC concentrate instead on 30-50-emw. prototypes—including heat production projects. It's obvious that engineering firms specializing in conventional power plant construction have the inside track in the nuclear power field. Therefore, Vitro feels that its greatest opportunities lie mainly in development of process heat reactors (although it has engineered Consolidated Edison's giant electric power unit for Indian Point, N.Y.).

But until economic feasibility of nuclear steam plants can be demonstrated, it's difficult to estimate the size of the process heat market. Edward Heller, chief engineer for nuclear projects at The H. K. Ferguson Co., Inc. (Cleveland), pegs the potential market at 50-100 plants per year. This estimate is based on the assumption that moderate-size reactors will be able to produce 150,000-300,000 lbs./hour of 150-psi. steam at a cost of about 65¢/million Btu. The market could be very much larger, says Heller, if reasonable costs can be obtained in smaller plants of, say, 100,000-lbs./hour capacity.

Getting Started: To get the nuclear heat business started, Heller suggested that AEC undertake the construction of three 25-75-thermal-megawatt reactors in 1959-60. Recommended types of reactors: pressurized-water, boiling-water or organic-moderated.

These systems stand the best chance of success, he added, because they would require less research and development than some of the newer reactors. All development efforts could, therefore, be centered on lowering the capital requirements and fuel costs to competitive ranges.

Economic Today? The big question raised by prospective users of nuclear process heat is: Just what is meant by "competitive"? Admittedly, the experts have no simple answer. There are too many unknowns—e.g., fuel use charges, plutonium buy-back prices, amount of AEC subsidies, local variations in fossil fuel prices—to permit valid economic comparisons. Judging by the best available estimates, however, the experts agree that nuclear process heat would be competitive today in certain areas where fossil fuels are relatively expensive. And there are hundreds of borderline cases where only a slight increase in fossil-fuel costs, or a slight decrease in nuclear steam costs, could swing the economic balance in favor of heat reactors.

To provide a clear idea of where nuclear heat plants could pay, American Hydrotherm Corp. (Long Island City, N.Y.) prepared a comprehensive study for AEC. Economic comparison was based on a minimum reactor size of 20 thermal megawatts capable of producing steam at costs ranging from 77¢ to $1.03/million Btu.

Hydrotherm zoned the U.S. into four geographical sections according to present costs of conventional steam generation (from less than 40¢/million Btu. to more than 60¢/million Btu.). It then eliminated the entire lowest-cost zone—most of the states between the Rockies and the Appalachians, except those in the Great Lakes area.

Next, it made a county-by-county survey of the remaining three areas, selecting as possible nuclear steam users all installations requiring more than 30,000 lbs./hour of steam for process heat or space heating. This provided 2,341 possible process heat applications; the list was further modified to take into account established operating practices of the various industries. This left an estimated 792 plants where 20-megawatt, or larger, reactors would be economically competitive with fossil-fueled plants.

Case Study: One of the strongest cases for the use of nuclear process heat was presented at the hearings by Michigan Chemical Corp. (*CW Technology Newsletter, Feb. 28*). Over the past year, the company has conducted detailed studies of the economic feasibility of using nuclear steam at its St. Louis, Mich., plant. MCC President Ted Marvin suggested that this plant would be a good spot for testing a heat reactor, expressed the company's interest in providing the plant site, the operating application and the management of the project—with AEC's help.

MCC's cost of steam from oil-fired boilers is now about 90¢/1,000 lbs.,

TRIPLE-TESTING
assures
SUPER PURITY AROMATICS

Delhi-Taylor Benzene, Toluene and Xylenes are precision processed for extreme purity. They are sulfur and thiophene-free, with a remarkably low paraffin content. What's more, a unique triple-testing procedure keeps a watchful eye on product purity. Delhi-Taylor aromatics are tested on-stream to assure high processing standards . . . in storage to make certain of the stability of the product . . . and finally just before shipment to the customer. Test results of this final sample are sent along with the shipment.

Delhi-Taylor's rigid quality control program is your assurance that our high purity aromatics will readily meet your most stringent specifications.

Send today for a copy of our new Specifications Folder.

DELHI TAYLOR

CHEMICAL DIVISION

DELHI-TAYLOR OIL CORPORATION

415 MADISON AVE. • NEW YORK 17, N. Y.

said Marvin, adding that this cost is high, compared with that of plants able to buy fossil fuels cheaply.

Process steam requirements of the St. Louis plant in the foreseeable future are estimated at about 150,000 lbs./hour at 150-200 psi. This load is well within the capabilities of the 45-50-thermal-megawatt reactors being considered for heat production. And since 75% of the total steam load is used for evaporating natural brine feeds to chemical manufacturing processes, it wouldn't be difficult to maintain the 90-95% utilization needed for economic operation.

High Capital Costs: Despite these apparently favorable conditions, MCC's study shows there are several other factors that could make or break the nuclear steam plant. Perhaps the most important one is the capital investment required for the nuclear facility. Cost of one of the heat reactors under consideration is about $3.3 million. Cost of a modern, high-efficiency coal-fired steam plant, on the other hand, is only about $1.5 million.

This cost problem is further complicated by amortization considerations. For example, coal-fired plants are a known quantity, can be written off over a 20-year period. But the untried heat reactor—plus the possibility of rapid obsolescence—makes it necessary to figure the nuclear plant on a 10-year depreciation period. Without some kind of subsidy to offset these differences in capital investment and operating costs, the nuclear plant is at a considerable cost disadvantage.

If the company had to foot the entire bill, nuclear steam cost would be about $1.04/1,000 lbs., compared with 83¢/1,000 lbs. for the coal-fired plant. But with an AEC subsidy to absorb the capital investment in excess of $1.5 million, MCC estimates that nuclear steam costs, under the best conditions (plutonium credit of $30/gram; no use charge for the nuclear fuel), would drop to about 76¢/1,000 lbs.

But until cost uncertainties are eliminated or at least greatly minimized, fossil-fueled plants have a decided edge over nuclear heat reactors. It's simply a matter of good business judgment, said Marvin, to assure a reasonable return on investment. But the studies indicate that the technology and economics of nuclear steam generation hold promise and should be pursued, he added.

Contingent Benefits: Most important side-effect of the widespread development and utilization of process heat reactors, say the experts, is the cost-cutting techniques that are certain to be discovered. Unlike large nuclear electric power plants that must be constructed to operate independently, nuclear steam plants could be constructed as an auxiliary installation to supplement existing steam-generating facilities of conventional design. In this way, says Heller, a processing company could hold down costs by putting in only minimum requirements. And it could take six to nine months to eliminate the bugs.

Further helping reduce costs: the stable market for nuclear fuel, equipment and fuel-reprocessing services, that a number of reactors might provide. This would also help development of competitive nuclear electric power.

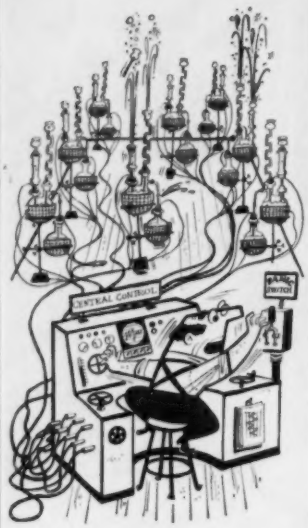
Operating techniques and equipment innovations could be tried out at small expense in process steam plants, says Heller. And mistakes would be $100,000 mistakes—not multimillion-dollar mistakes, as they are in a 500-700-megawatt power reactor.

These are strong reasons for a program of nuclear process steam plants. And such a program would be the quickest way for chemical makers to reap the benefits of their nuclear process research.

Liquid Fertilizer Route

A cheaper process for making liquid fertilizers was recently proposed by Tennessee Valley Authority Wilson Dam, Ala.). The method involves use of wet-process phosphoric acid rather than the more costly furnace-process acid to supply the phosphorus.

Problem in using wet-process acid has been the formation of apparatus-clogging precipitates from solid impurities in the acid upon addition of ammonia. TVA's solution: part of the phosphorus content is supplied by superphosphoric acid (P_2O_5 content: 76% vs. 54% in the normal acid), which sequesters the impurities. TVA is offering superphosphoric acid to



Why bother when you can get it from Eastman?

When you need a special organic in a quantity that strains your laboratory facilities or ties up your staff, try Eastman Organic Chemicals Department, *Distillation Products Industries,* Rochester 3, N. Y.

DPi

there are some 3700 Eastman Organic Chemicals for science and industry

DISTILLATION PRODUCTS INDUSTRIES
is a division of
EASTMAN KODAK COMPANY

in only 8 months at 10 per cent under budget

10% UNDER BUDGET—Pennsalt Chemicals Corporation's new Methylamines plant was completed by Catalytic, Engineers—Constructors, at a figure ten per cent under the original estimated cost.

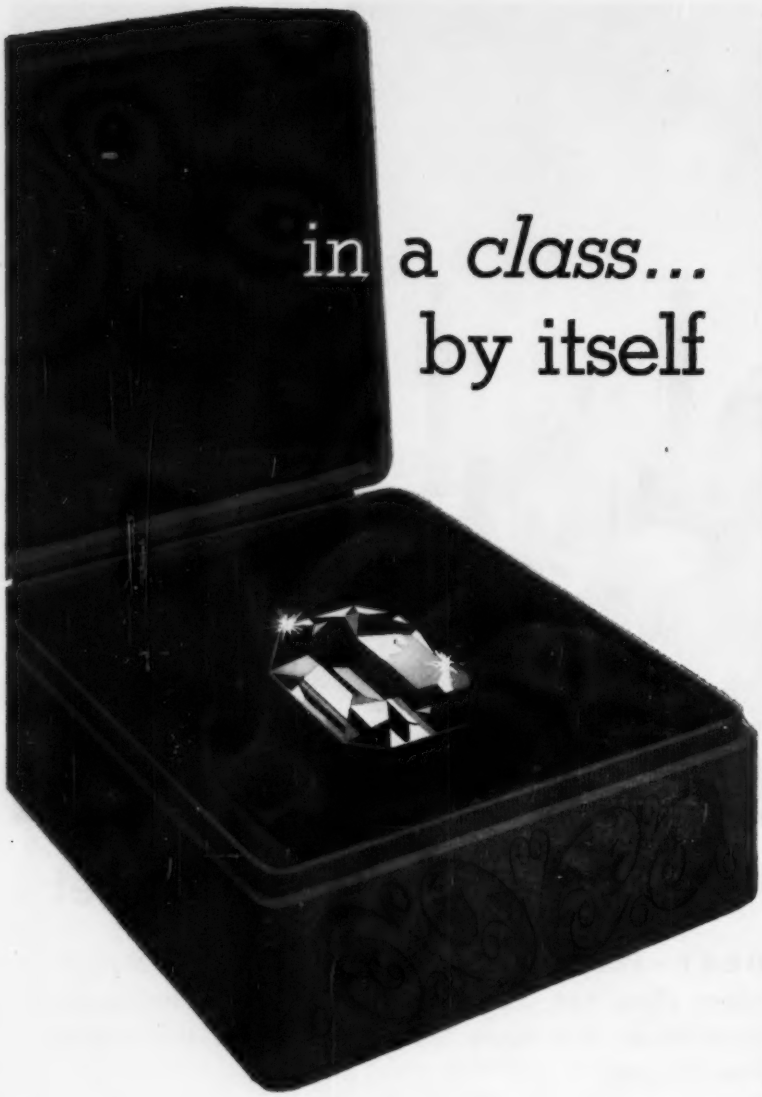
AHEAD OF SCHEDULE—The Methylamines plant was completed and ready for start-up in only eight months after the start of engineering. This "On-Time" completion was in advance of the requirements of Pennsalt Chemicals Corporation.

UNDIVIDED RESPONSIBILITY—Catalytic's control and coordination of all phases of this project and close cooperation with the client were prime factors in the successful completion. This Methylamines plant again proved Catalytic's ability to render all client services "On-Time, On-Budget".

CATALYTIC
CONSTRUCTION COMPANY

Philadelphia 2, Pa.
New York, N. Y.
Baton Rouge, La.
Toledo, O.
Tulsa, Okla.
In Canada: Catalytic Construction of Canada, Limited; Sarnia, Ontario; Toronto, Ontario; Montreal, Quebec.

Catalytic *On-Time . . . On-Budget* Services for the metallurgical, chemical, petrochemical and oil refining industries: Project Analysis; Process Development; Process Design; Economic Studies; Engineering; Procurement; Construction.



piccolyte

PICCOLYTE is outstanding in critical compounding. The excellent chemical properties of PICCOLYTE Resins along with its color stability provides many compounding opportunities.

The trademark of quality

PENNSYLVANIA INDUSTRIAL CHEMICAL CORPORATION
CLAIRTON, PENNSYLVANIA

fertilizer manufacturers in experimental quantities.

The phosphorus contribution from superphosphoric acid required to result in effective sequestering varies with the application. Typically, it runs from 10-20% in nonpotash-containing fertilizers, 30-50% in blends containing potash.

Another approach to making wet-process acid practical for the manufacture of liquid fertilizers has been proposed by Robert C. Miller (Webster Groves, Mo.): use urea to furnish at least half the nitrogen. Urea forms colloidal complexes with mineral phosphates; they take several days to coagulate, can be stabilized for longer periods.

Consumption of liquid fertilizers has risen steeply in the past few years. Between 1955 and '57, the number of plants producing them in the Central and Eastern states has risen from 35 to 115.

But while the percentage rise is large, actual tonnage is still only 1% of the mixed fertilizers used in those states.

Several fertilizer producers have already taken experimental quantities of superphosphoric acid for trial. But an "unfavorable freight rate situation" has canceled out use of railroad tank-car shipments so far. TVA is trying to get the rates lowered, seeks help from wet-process acid producers.

If trial use of the superphosphoric acid works out, TVA says, it expects that commercial furnace acid producers themselves will begin making the new material.

Fluid Mining

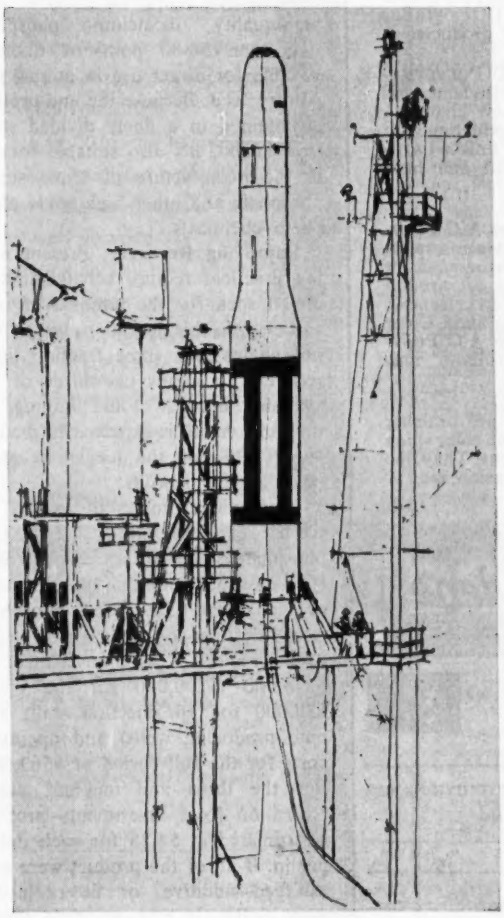
A novel fluid-mining technique for in situ recovery of phosphates was described at an opening-day session of the recent annual meeting of the American Institute of Mining, Metallurgical and Petroleum Engineers in San Francisco.

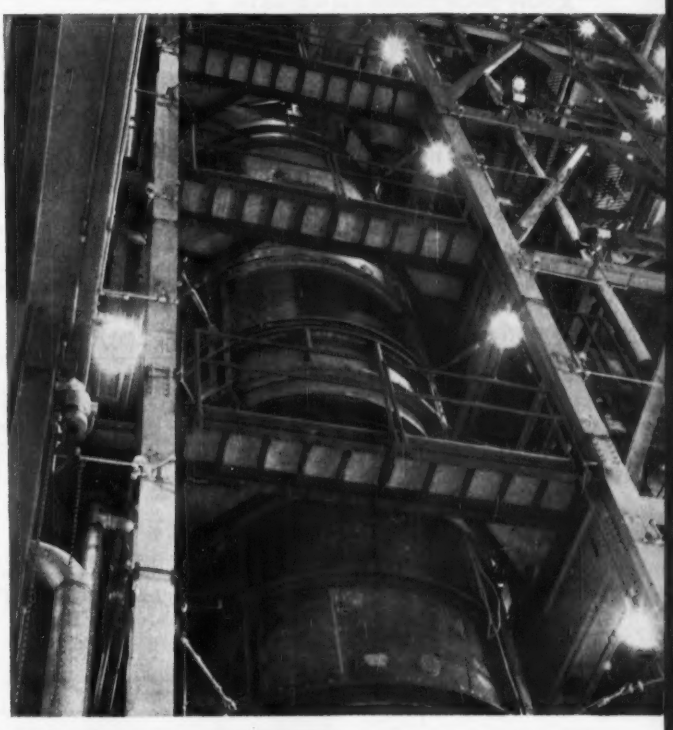
Inventor Sylvain Pirson, professor of petroleum engineering at the University of Texas, said the new method borrows oil-producing techniques (hydraulic formation fracturing and water-flooding) to recover phosphates from deposits that can't be mined economically by conventional methods.

Pirson's process involves drilling of

ONE IMPORTANT REASON WHY THERE CAN BE A BLASTOFF

The dome head you see at the right is part of what are familiarly known among the missiles people as "battleship tanks." That's because it is too heavy to be air borne. Yet it performs an important function in the missiles program. It is a part of heavy-walled units like those below which are used to test components, subsystems and systems for the TITAN missile by The Martin Company at its Denver facility. Graver's assignment was a number of dome heads and cones for this testing installation, another example of how Graver's century-proved skills with alloys and special steels are being employed in the missiles program.





GRAVER TANK & MFG. CO.
DIVISION—UNION TANK CAR COMPANY
EAST CHICAGO, IND.

GRAVER®

Plants and Offices Across America

IS A-C POLYETHYLENE THE "X"* FACTOR IN YOUR PROCESS?

Stories of successful application of A-C POLYETHYLENE are pouring in from so many fields and industries that we haven't had an opportunity to explore the apparently limitless uses of this exciting new polymer. So we're asking you! If your field of operation is even remotely similar to those below, it is very probable that A-C POLYETHYLENE can give you increased sales, lower costs and many other advantages. Find out today!

Look what it's done for others!

X **Injection Molders** are getting shorter cycles, complete control of flow, higher gloss, sure mold release, with the ability to mold larger and more intricate parts.

X **Polish Makers** use it in its emulsifiable form and call it the "Polish Maker's Polyethylene". They're getting finish durability, non-slip properties, and rebuffability!

X **Paper Converters** use it as a hot melt and are enthusiastic about the low-cost quality coating it offers. Grease resistance, scuff resistance and single feed to automatic machines are other advantages!

X **Dairy Carton Coaters** add it to waxes for their cartons, getting longer shelf life and reducing flaking, leaking and bulging!

X **Food Packagers** like the smarter, glossier appearance of their packages—less rub-off and scuff. Printing looks better, too!

X **Box Makers** coat interior surfaces of corrugated cartons with an A-C POLYETHYLENE-Paraffin blend to eliminate the need for liners! Scratch from paper fibers on fine finishes is eliminated!

X **Textile Finishers** find A-C POLYETHYLENE surprisingly versatile for sizes or finishes. Excellent hand, sewability, durability, abrasion resistance and many production advantages result from using this polymer!

X **Ink and Paint Manufacturers** are satisfied that A-C POLYETHYLENE adds anti-smudge and scuff resistance characteristics to their products!

X **Slush Molders** use A-C POLYETHYLENE with other polyethylenes and end up with a "brand new" material, giving them simpler production with lowest mold costs. The finished articles are tough, colorful and have fine detail!

X **Film Extruders** are using A-C POLYETHYLENE for faster extrusion rates, lower machine temperatures, easier gauge control and less all around machine stress. A-C POLYETHYLENE is a natural for coloring films. Color concentrates made with A-C POLYETHYLENE produce brilliant, uniformly colored film!

X **Squeeze Bottle Makers** are praising the glossy finish and even color when using A-C POLYETHYLENE. They like the faster molding operation, too!

X* = PROFITS, QUALITY, PRODUCTION...

When it's A-C® Polyethylene

LET US SHOW YOU HOW A-C POLYETHYLENE CAN BE THE "X" FACTOR IN YOUR PROCESS!

Mail coupon today!

SEMET-SOLVAY PETROCHEMICAL DIVISION
Allied Chemical & Dye Corporation
Room No. 552-AB
40 Rector Street, New York 6, N. Y.

Allied Chemical

We manufacture _____

Please send information indicating how A-C POLYETHYLENE can help us.

Name _____

Company _____

Address _____

City _____ Zone _____ State _____

both injection and producing wells into the phosphate-bearing formation. A selective leaching solution, sulfur dioxide in water, is pumped down the injection well; it is recovered, laden with various dissolved minerals from production wells for subsequent extraction of high-purity dicalcium phosphate.

Purification of the phosphate-bearing leaching solution starts with the removal of most of the contained iron, aluminum and silica by filtration through crushed limestone. The solution is then neutralized with a strong base (e.g., 50% sodium hydroxide) to produce a precipitate of tricalcium and dicalcium phosphate and calcium sulfite. After further filtration to remove the fluorine, which remains in solution, the precipitate is treated with phosphoric acid and heated to recover sulfur dioxide for recycle.

Final neutralization of the purified monocalcium phosphate solution yields high-quality dicalcium phosphate (less than 50-80 ppm. of fluorine) suitable for direct use in animal and poultry feed. Because the end-product is obtained in a finely divided state, says Pirson, it's also suitable for use in the manufacture of triple superphosphate and other high-grade phosphate chemicals.

Improving Recovery: Present mining practices require beneficiation of mined rock for the removal of sand and clay. In this operation, loss of fine phosphates in a slime fraction limits recovery to about two-thirds of the available mineral. Fluid mining, on the other hand, is expected to recover about 80% of the dicalcium phosphate in the deposits.

Economic estimates of *in situ* recovery of low-grade (20% P_2O_5) phosphates in Florida's Bone Valley formation indicate that the recovery of 21,500 tons of dicalcium phosphate over a three-and-a-half-year period would require a fixed investment of $238,000 ($200,000 for the plant; $38,000 for 16 injection wells and nine producing wells) and operating costs for the full period of $563,000. For the three and one-half years, return on fixed investment—profit—is estimated at $4.28 for each dollar put in, if all of the product were sold as feed additive, or 66½¢/investment dollar, if sold as triple superphosphate.

Which of these 3 products and services can you use from BECCO?

New Cold Caustic Bleach Process

Looking for a way to use greater amounts of low-cost, more plentiful pulp—without capital investment for bleach equipment? Then let a Becco Sales Engineer show you our new technique* which allows you to bleach in the same equipment regularly used for the manufacture of cold caustic pulp.

In this new process, peroxide bleach liquor is added at the Bauer Refiner, and bleaching occurs during the refining operation. Bleach response depends on refiner densities.

Up to 20 points brightness increase has been obtained in commercial operations to date, and with no additional steam costs, no holding time, and no excessive chemical costs.

Becco can assist you immediately in setting up a production run and evaluating results. First step: use the coupon to let us know you're interested.

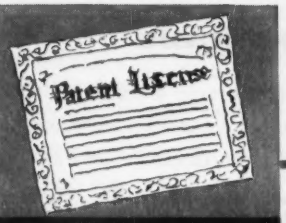
*—Patent Pending

BECCO fmc

BECCO CHEMICAL DIVISION, FMC
Station B, Buffalo, New York
Dept. CW-H

Gentlemen:
Please have a Sales Engineer give me more information on Becco's Cold Caustic Bleach Process.

NAME_____
FIRM_____
ADDRESS_____
CITY_____
ZONE____ STATE_____



"Enclosing $1.00 — Send Patent License"

Well, perhaps there's a little more to your gaining use of Becco patents than just mailing your dollar in, but not much more. And certainly, no more money. The $1.00 really does cover it.

Becco has lots of patents, granted as a result of innovations in the use of Hydrogen Peroxide and other Peroxygen chemicals developed in Becco's Research Laboratories. But they don't do us a whole lot of good locked tightly in our safe. So, we long ago adopted the following policy:

If one of our patents can help you, we'll be glad to license the rights to you **perpetually,** for just one dollar. You get a nice certificate, incidentally, to cover the legalities, but more important – you also get free our complete engineering help in setting up your process, handling the material, maintenance, etc., etc.

What do **we** get? You as a **customer** – we hope – but there's no obligation on your part. Just seems to work out that way, though – when we know enough about a particular peroxygen to hold a patent on its use, chances are we've also learned enough to produce it purer than anyone else. You benefit from this; we do, too.

Use the coupon below to ask for a Sales Engineer – or our list of patents – that may help you solve an important problem.

BECCO fmc

BECCO CHEMICAL DIVISION, FMC
Station B, Buffalo, New York
Dept. CW-F

Gentlemen:
Please send your list of patents available on the use of
- ☐ Hydrogen Peroxide
- ☐ Peroxygen Chemicals
- ☐ Persulfate Chemicals
- ☐ Please have a Sales Engineer call.

NAME_____
FIRM_____
ADDRESS_____
CITY_____
ZONE____ STATE_____

Problems in handling Hydrogen Peroxide

?

Becco's Four-Fold Engineering Service Program—offered free—includes:

1. Comprehensive survey of your facilities.
2. Specific proposal with recommendation of proved equipment and where it is obtainable.
3. Installation supervision by Becco.
4. Periodic inspection and permanent service.

Can you use this free Becco help, based on more years of experience with bulk handling of H_2O_2 than any other manufacturer? Use the coupon to let us know.

BECCO fmc

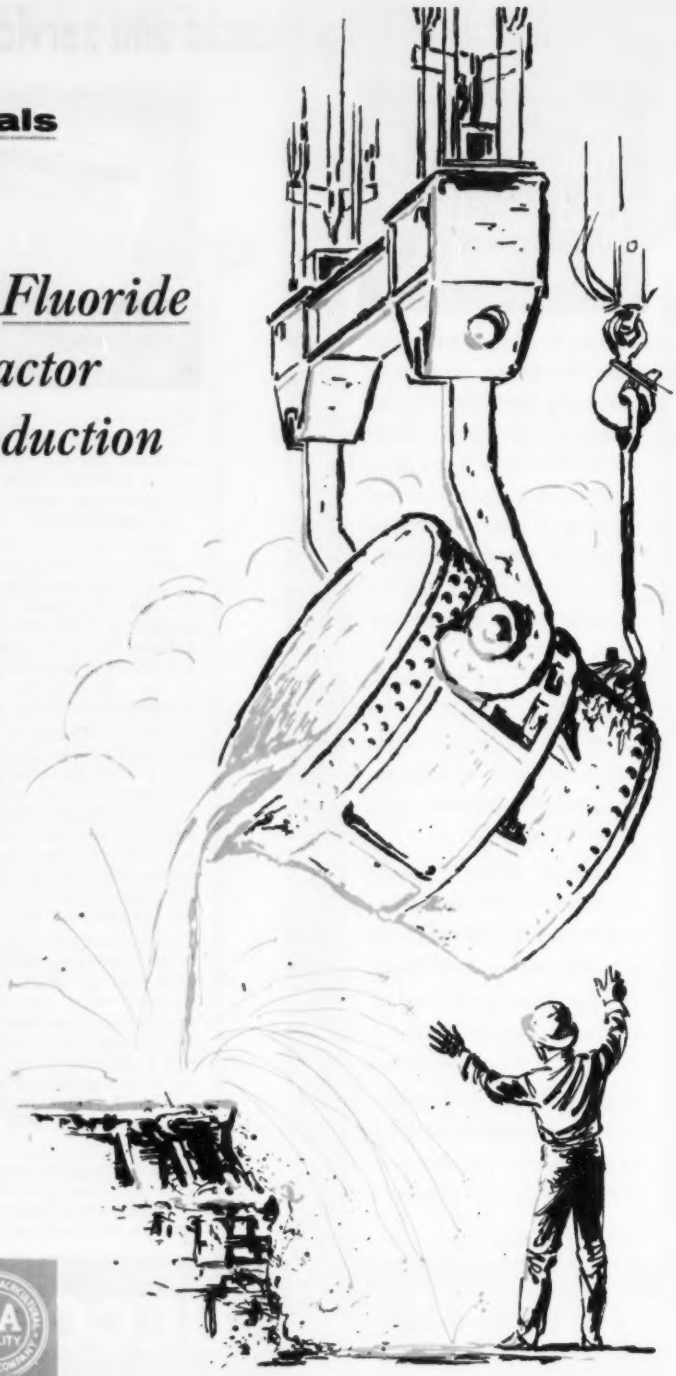
BECCO CHEMICAL DIVISION, FMC
Station B, Buffalo, New York
Dept. CW-B

Gentlemen:
Please tell me more about your Four-Fold Engineering Service.

NAME_____
FIRM_____
ADDRESS_____
CITY_____
ZONE____ STATE_____

AA Quality Chemicals

AA Quality Sodium Fluoride ...a major value factor in rimmed steel production



RIMMED steel . . . the most widely used, all-purpose steel in a steel-hungry nation . . . keeping costs down and performance up in products ranging from appliance and automotive parts to kitchen gadgets and industrial piping.

AA QUALITY Sodium Fluoride is a major value factor in the production of rimmed steel. It is the most economical, most efficient flux for deoxidization during the cooling process. The resultant steel has a smoother, harder surface with greater uniformity throughout the metal.

Made under exacting chemical controls, AA QUALITY Sodium Fluoride is a uniform, high quality product of such purity (98%) that it meets the specifications of the American Water Works Association for fluoridation of drinking water. Technical grades are available in both granulated and powder form.

For further information about AA QUALITY Sodium Fluoride or any other AA QUALITY Chemical, write to our Research Department on your letterhead. Free samples and data sheets will be furnished to you gladly.

The American Agricultural Chemical Company

Chemical Division: 100 Church St., N. Y. 7, N. Y. • 38 plants and offices serving U. S., Canada, Cuba

AA QUALITY® PHOSPHORUS PRODUCTS

PHOSPHORUS AND PHOSPHORUS COMPOUNDS
Elemental Phosphorus (Yellow-White)
Phosphorus Red (Amorphous)
Phosphorus Pentasulphide • Sesquisulphide
Ferro Phosphorus (Iron Phosphide)

PHOSPHATES
Disodium Phosphate • Trisodium Phosphate
PHOS-FEED® BRAND Dicalcium Phosphate

PHOSPHORIC ACID
85% N.F. Grade • 75% Pure Food Grade
50% Pure Food Grade
Agricultural and Other Grades

PHOSPHATE ROCK & FERTILIZERS
All grades Florida Pebble Phosphate Rock
Superphosphate
Complete Fertilizers
AGRINITE®

OTHER AA QUALITY PRODUCTS

FLUORIDES & SILICOFLUORIDES
Sodium Fluoride
Ammonium Silicofluoride
Magnesium Silicofluoride
Potassium Silicofluoride
Sodium Silicofluoride
Zinc Silicofluoride
Silicofluoride Mixtures
Magnesium Fluoride

GELATIN
KEYSTONE® Gelatin: Edible, Photographic Pharmaceutical, Technical

OTHER PRODUCTS
Animal Bone Charcoal
Bone Black Pigment (COSMIC® BLACKS)
Bone Ash
Bone Oil
Keystone Ammonium Carbonate
Sulphuric Acid

Technology
Newsletter

CHEMICAL WEEK
March 14, 1959

Secret of Sohio's new acrylonitrile process? Lithium catalysis. Apparently, it accounts for one of the mysteries in the process—the vapor-phase reaction between acrolein and ammonia to yield acrylonitrile as the main product (*CW, Feb. 28, p. 71*).

•

Wash-and-wear wool garments will be "possible eventually," according to Harold Lundgren, head of the U.S. Dept. of Agriculture's Wool and Mohair Laboratory at Albany, Calif. Lundgren bases his opinion on current lab work in which wool fabric is dipped into an emulsion of a modified epoxy resin, then heated. But Lundgren says the lab still has not learned how to produce wash-and-wear woolens under commercial processing conditions.

•

Chemical coolants for machining space-age steels are now being studied by Convair Division of General Dynamics Corp. (San Diego, Calif.) under a new $135,000 Air Force contract. Problem: some steels necessary for jet engines and missiles become unmachinable at 900-1200 F, temperatures often reached in ordinary machining. So Convair will use carbon dioxide and ABC O 156 Solvene (a mixture of Stoddard solvent and trichloroethylene) separately in tests to cool five test steels to machining temperatures as low as –150 F.

•

Sun Oil Co.'s automation-development program will be carried out at a $100,000 product control center now under construction at the company's Marcus Hook, Pa., refinery. Project purpose: to determine operating variables and instrument system requirements. Genesys Corp.—computer-manufacturing subsidiary of Chance Vought Aircraft, Inc. (Dallas, Tex.)—is working with Sun on the task.

The control center is scheduled to start up in mid-April at a 60,000-bbls./day refinery unit. Cat cracking, crude- and vacuum-distillation, visbreaking and gas-processing are among the operations to be studied there. Operating data and variables in product quality will be monitored continuously. Later, a computer will be added to perform more complicated evaluation of the data.

Paul Barton, director of Sun's Advanced Management and Methods Dept., says studies will be "free from preconceptions in the art of process control. New equipment and conventional computers will all have a chance to prove their merits."

Another joint computer-control project was launched last week by Universal Oil Products (Des Plaines, Ill.) and Daystrom Systems (La Jolla, Calif.)

The firms have been quietly operating a continuous computer-operated control system on pilot-scale equipment at UOP's labs, say that

it's expected to have application in continuous processes too complex for available control systems.

•

A breakthrough in tungsten fabricating techniques promises to springboard this tough, refractory metal into competition for space-age application. Fansteel Metallurgical Corp. (North Chicago, Ill.) disclosed last week that it now has methods—past the pilot stage of development—for forging, hot extruding, deep drawing and spinning operations. These operations had never been possible before.

Because tungsten is the strongest, highest-melting (m.p.:6152 F) and one of the densest of all metallic elements and has the greatest natural hardness, it seems ideally suited to special, punishing jobs. But its uses have been limited to parts that could be fabricated by powder metallurgy. Also, tungsten parts cost four to five times as much as competing materials, such as molybdenum. But in some space-age applications, cost is very important —where failure cannot be risked.

Fansteel expects to first make tungsten parts for rockets and missiles. Typical applications: rocket nozzles and electronic components that frequently must withstand temperatures above 5,000 F. First test product is a small spun-tungsten nozzle, which will soon be tried out by a leading West Coast aircraft firm.

The company also sees prospects for wrought tungsten process equipment, such as heat exchangers and reactor liners, for high-temperature processes that can't be contained in conventional materials.

•

General Electric is entering the automatic library-searching equipment field. GE will build a machine, called the GE-250, which will be capable of searching 100,000 scientific abstracts per hour. Purchaser: Western Reserve University (Cleveland).

•

A new ulcer drug is Pfizer's Enarax. A combination of the nerve-blocking agent, oxyphencyclimine, and the tranquilizer, Atarax, it reportedly aided 100 of 103 patients (having a variety of gastrointestinal disorders) in recent clinical trials conducted by Dr. Bert H. Leming, Jr., of the University of Tennessee Medical Units, Memphis.

•

The recent isolation of 6-amino-penicillanic acid at England's Beecham Research Laboratories (Brokham Park, Surrey) is causing a stir among some U.S. antibiotics producers, who reportedly want to collaborate on further research. Reason: the compound could be the key to future penicillin varieties, capable of combating micro-organisms that now resist chemotherapy.

•

Thiokol has received a $77-million contract for the propulsion system of the Air Force's Minuteman. The firm will research and develop solid-fueled systems for all three stages. Others already engaged in similar activities for the program are Hercules Powder and Aerojet-General.

Periodic Chart of the Atoms, Copyright W. M. Welch Mfg. Company, Chicago*

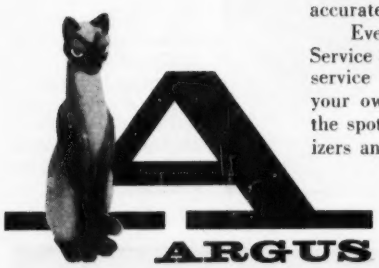
ARGUS GETS THE ANSWERS—CAT-QUICK!

You can't keep your customers waiting when something goes wrong with a vinyl formulation. That's why more and more of our customers call on Argus, where they get quick, accurate answers to their problems.

Every member of the Argus Technical Service Staff is an expert on vinyls. Technical service from Argus is equivalent to having your own vinyl research laboratory right on the spot — because we work with vinyl stabilizers and plasticizers around the clock.

This kind of no-nonsense, well-informed research has made Argus the leader in the industry — and Argus Mark stabilizers and Drapex plasticizers the industry's recognized standards.

No matter how complex your problem, ask Argus. We'll find the answers for you quickly — in our regular line products or in basic, original research done on your own formulations by our Technical Service Staff. Write today for technical bulletins and samples.

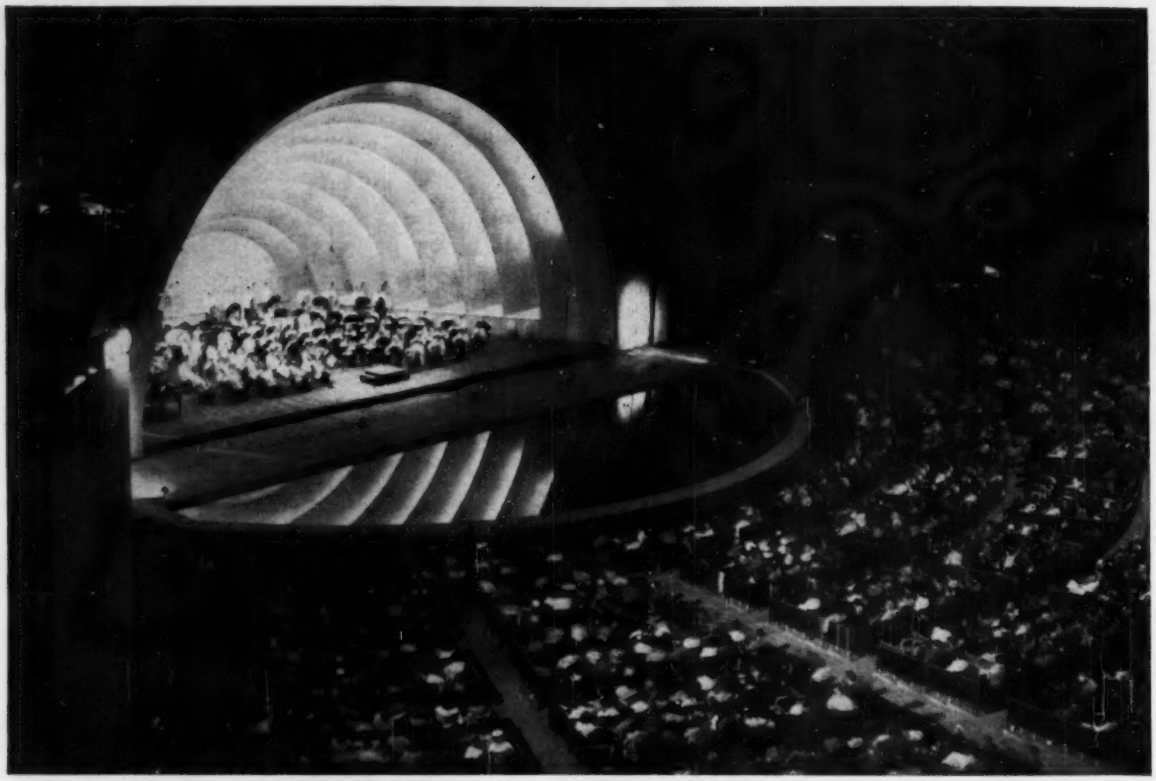


ARGUS CHEMICAL CORPORATION / New York and Cleveland

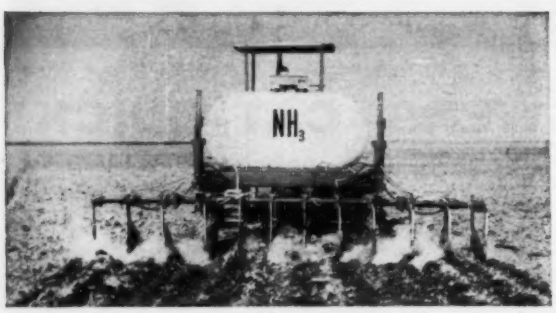
Main Office: 633 Court Street, Brooklyn 31, N. Y. Branch: Frederick Building, Cleveland 15, Ohio

Rep's.: H. M. Royal, Inc., 4814 Loma Vista Ave., Los Angeles; Philipp Bros. Chemicals, Inc., 10 High St., Boston; H. L. Blachford, Ltd., 977 Aqueduct St., Montreal

HOW *HERCULES* HELPS...



BEAUTIFY THE HOLLYWOOD BOWL—This crescent-shaped pool, reflecting the concrete-arch acoustical shell, doubles in brass as an orchestra pit, or is covered to add to the stage itself. Its surface is protected against such severe three-way usage by Nelsonite Pool Coating, based on Parlon® chlorinated rubber. Well over half of all the nation's swimming pools are likewise protected with Parlon-based paints, for durability, weatherability, chemical and alkali resistance, and a smooth waterproof finish. Other Parlon-based coatings protect everything from waterworks to chemical plants, gondola cars to tugs and ships; and preserve the good looks of concrete and stucco homes and buildings. Consult your regular source of coatings.



FEED HUNGRY SOIL—Anhydrous ammonia, produced by Hercules plants in three important agricultural areas, replenishes nitrogen-deficient soils. Literally "injected" into the ground, the ammonic nitrogen combines almost instantly with soil particles. Applications can be made nearly any time of the year when temperature and moisture conditions are suitable.

SERVE SOAP IN STYLE—Bobrick's new line of soap dispensers features an unbreakable plastic globe made with Hi-fax® high-density polyethylene. Hi-fax is now being used in blown containers of many types, offering handsome styling durability and resistance to chemical corrosion in a low-cost, easily-processed plastic material.

HERCULES POWDER COMPANY
INCORPORATED
900 Market Street, Wilmington 99, Delaware

G59-2

CHEMICAL MATERIALS FOR INDUSTRY

HERCULES

Trouble Behind the Sunny Aluminum Picture

Behind a carefully erected facade of optimism, the U.S. aluminum industry is in turmoil. Huge overcapacity, climbing production costs, mushrooming foreign competition, international political entanglements combine to upset the domestic aluminum scene. This week, there's a much clearer view of one troublespot—Russian competition.

Heretofore, potential competitive impact of Russian aluminum production has been hard to evaluate because of insufficient data. Now, *CW*'s correspondent in Vienna reports that Russia has laid the cards on the table, confidently hopes to hold the biggest aluminum hand within the next six years. The stakes are high, and U.S. producers will go all out to top the U.S.S.R. bid. Here's the challenge they will have to meet

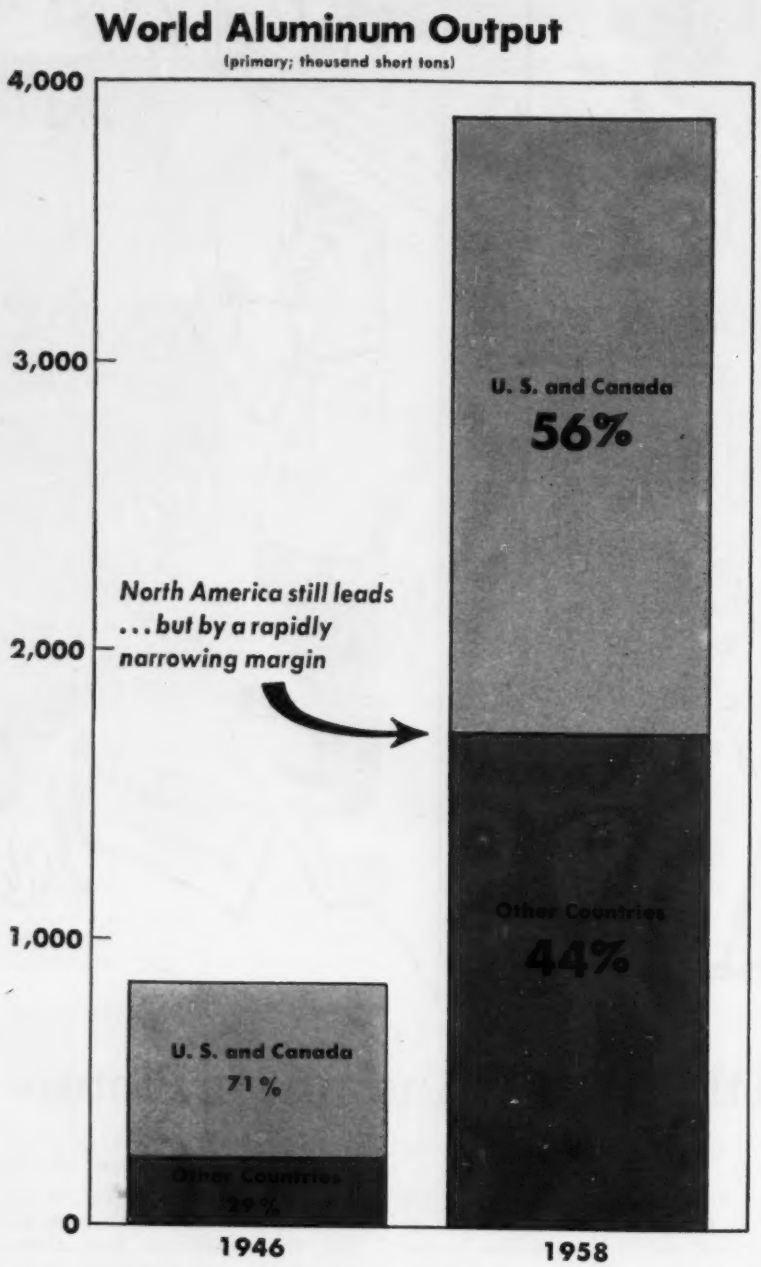
Seven Years to the Top? Nikita Khrushchev's "Seven Year Plan" demands that the U.S.S.R. must become the world's biggest producer of aluminum by '65. It will be accomplished, it's hoped, by tapping the nation's huge bauxite and nepheline reserves, and by allocation of 10.64% of the nation's total electrical power to aluminum production.

The goal: some 3,586,000 short tons/year of aluminum output. This compares with a small 51,570 tons in '37, a moderate 771,400 tons in '55, and a spectacular increase over the expected 1,620,000 tons in '60.

U.S. aluminum capacity—now considerably more than Russia's—totals about 2.2 million tons/year, will increase to 2.6 million tons/year by '60.

But pessimistic observers point out that U.S. aluminum production—about 1.55 million tons in '58—is far below current capacity. As things stand now, they say, there appears to be little incentive to build more capacity in the next few years, if it's not to be used.

Some U.S. aluminum producers find a silver lining in the aluminum situation, prefer to talk—not of overcapacity—but of "abundance" that has been "courageously installed" by the industry to meet all possible future requirements. This brighter viewpoint is predicated on the assumption that



big new markets will open up in electrical, transportation and construction industries *(CW, Feb. 28, p. 62)*.

It's a view defensible with good argument. But now the new, clearer understanding of Russia's ambitions underscores the need for re-evaluating the U.S. aluminum supply/demand picture relative to the world market for the metal.

U.S. Fading? Even before this revelation of Russia's plan, it was obvious that U.S.-Canadian domination in the world aluminum scene was fading fast. In '46, for example, U.S. and Canada together turned out 71% of the total world aluminum; in '58, North America's share amounted to a relatively small 56% *(see chart, p. 70)*.

U.S. aluminum producers—privately if not publicly—have for long recognized the potential threat from Russian production, but most have apparently underestimated it.

For example, U.S. producers previously estimated Russia's current capacity at 590,000 tons/year; capacity in satellite countries (West Germany, Hungary, Poland, Czechoslovakia, Red China) was put at 190,000 tons/year. It was estimated that Soviet bloc production might hit 1.43 million tons/year by '61; of this an expected 1.11 million tons was to be turned out in Russia.

Apparently, these estimates were far too low. New estimates of Russia's aluminum production in '60 (1.62 million short tons) are considerably more than the total '61 estimate for the entire Soviet bloc.

Malicious Dumping? So far, Communist countries have dumped only small amounts of aluminum on world markets. U.S. aluminum marketers say, however, that the jolt to the American industry has been far out of proportion to the metal's intrinsic value.

For example, sale of Russian aluminum to England has reportedly resulted in exports of fabricated aluminum products to U.S., at prices 20% below the domestic rates.

And the 2¢/lb. price cut on primary aluminum, initiated a year ago by Canadian producers and quickly followed by the U.S. industry, was admittedly to counter Russian threats *(CW Market Newsletters, April 5 and 19 and June 14, '58)*. In '57, Russia dangled aluminum before European buyers at 2% below Western prices while simultaneously maintaining domestic metal prices 139% higher than the export price.

There was considerable resentment, too, about awarding of a U.S. government contract for 250,000 lbs. of aluminum plate to a Belgian producer that reportedly obtained its metal from the Soviet bloc.

Whether Russia is after world markets for political reasons, or just for the same reasons as U.S. and Canadian producers, there's little doubt that it wants to expand its foreign sales by as much as it can spare from domestic requirements, and the effect will simply mean rough competition for U.S. producers.

Consequently, U.S. aluminum producers are trying to convince the U.S. government that protection of some sort is needed, although some aluminum experts are reluctant to voice their fears publicly.

Obviously, it's even harder to demand, publicly, similar protection

CHEMICALS OUTLOOK

March, 1959

This news bulletin about Wyandotte Chemicals services, products, and their applications, is published to help keep you posted. Perhaps you will want to route these and subsequent facts to interested members of your organization. Additional information and trial quantities of Wyandotte products are available upon request . . . may we serve you?

PLURACOL P NOW AVAILABLE IN A COMPLETE SERIES

Wyandotte's Pluracol* P series of polypropylene glycols is now offered in commercial quantities in four liquid grades, with molecular weights ranging from 400 to 2,000 . . . and are designated Pluracols P 410, P 710, P 1010, and P 2010. Shipment is in 5- and 55-gallon drums, and in tankcars.

Wyandotte Pluracol P's are virtually water-white and nonvolatile, with a slight ether-like odor. Their water solubility decreases with increasing molecular weight — i.e., Pluracol P 410 is completely water soluble, P 710 is moderately soluble, while P 1010 and P 2010 are practically insoluble at room temperature.

Their combination of desirable properties suggests broad application in formulating and processing. For example, because Pluracol P's are easily inhibited to prevent oxidation in formulations, and are noncorrosive to metals, they may be used effectively in hydraulic brake fluids, as well as in other functional fluids. They impart excellent viscosity-temperature characteristics to the finished formulation, and do not adversely affect rubber.

As chemical intermediates, the members of the Pluracol P series may be reacted through their terminal hydroxyl groups to form mono- and diesters, ethers, acetals, amines, amides, and thioethers. Pluracol P 2010 has found wide acceptance in the preparation of polyurethane foams.

Other uses include: antifoamers in paint formulations, antiblooming agents for pentachlorophenol-treated wood, binders and lubricants for ceramics, plasticizers of resin-treated papers.

For technical data on the Pluracol P series — or on our Pluracol E series of polyethylene glycols (four liquid and six solid grades, ranging in molecular weight from 200 to 6,000) — write us direct, c/o Dept. CO.

SEND FOR YOUR COPY OF OUR BRAND-NEW PURECAL BOOK!

A spanking-new book on Wyandotte Purecal* calcium carbonates is off the press and ready for your chemical files. More than a year in preparation, this compact hard-cover volume describes, in 128 fact-filled pages, all phases of calcium carbonates . . . from history and manufacturing processes, physical and chemical properties to analytical methods, handling and storage. Contains over 100 photos, diagrams, and tables, including conversion factors. Indexed. For a copy, write us on your company letterhead in care of Dept. CO.

*REG. U.S. PAT. OFF.

Wyandotte CHEMICALS

WYANDOTTE CHEMICALS CORPORATION
WYANDOTTE, MICHIGAN • OFFICES IN PRINCIPAL CITIES

SODA ASH • CAUSTIC SODA • BICARBONATE OF SODA • CALCIUM CARBONATE • CALCIUM CHLORIDE • CHLORINE • MURIATIC ACID • HYDROGEN • DRY ICE
GLYCOLS • SYNTHETIC DETERGENTS (anionic and nonionic) • SODIUM CMC • ETHYLENE OXIDE • ETHYLENE DICHLORIDE • POLYETHYLENE GLYCOL • PROPYLENE OXIDE
PROPYLENE DICHLORIDE • POLYPROPYLENE GLYCOL • DICHLORODIMETHYLHYDANTOIN • CHLORINATED SOLVENTS • OTHER ORGANIC AND INORGANIC CHEMICALS

U. S. Primary Aluminum Capacity

(short tons)

	CAPACITY DEC. 31, '58	NEW CAPACITY	CAPACITY DEC. 31, '60
Alcoa	798,250	202,000	1,000,250
Anaconda	60,000	—	60,000
Harvey	54,000	—	54,000
Kaiser	537,000	72,500	609,500
Ormet	144,000	36,000	180,000
Reynolds	601,000	100,000	701,000
Total	2,194,250	410,500	2,604,750

against aluminum originating in politically friendly countries—England, France, West Germany, Canada. One argument: U.S. producers have a high cost labor disadvantage. Nonetheless, in these areas, too, the competitive scene is becoming increasingly turbulent. And politics, as well as economics, enters here, too.

Friendly Pressure: A Canadian aluminum marketer a few weeks ago stoked the fire of Canadian resentment about alleged U.S. domination of the Dominion's aluminum industry *(CW Business Newsletter, Feb. 14)*. The Vancouver exporter, William Comer, vehemently protested refusal of Canadian aluminum producers to make available $1 million worth of the metal for sale to Communist China because such sales "would hazard relationships with steady customers"—obviously meaning the U.S.

In a series of sizzling letters and telegrams to Canada's Trade Minister Gordon Churchill, Comer charged that "Washington controls our aluminum" and demanded that Churchill ascertain from the U.S. State Dept. "why they stop Canadian aluminum while Canada is overstocked."

Opposition leader Lester Pearson asked for assurances that no U.S. pressures were involved: United Steelworkers of America—representing about 8,000 Alcan workers—asserted that "any decision not to sell to China was due to prejudices of the U.S. citizens who comprise half the board of directors of the allegedly independent Aluminum Co. of Canada." Churchill deferred answering, pending full investigation.

Further annoying the Canadians is the U.S. producers' clamor for tariff protection. Ostensibly, the U.S. seeks protection largely from aluminum and aluminum products originating in Soviet bloc countries. (Actually there are no direct imports of Russian aluminum to the U.S., but U.S. producers last year smarted from "Russian raids" on British and European markets.)

But Canadian observers have been quick to point out that U.S. tariff protection would probably hit Canadian aluminum hardest. Hence the two-pronged complaint that the U.S. won't freely take Canadian metal but still tries to prevent its sale to overseas buyers.

Canada had a total aluminum capacity of 860,000 tons by the end of '58. But its ouput was just 610,000 tons in '58. Nonetheless, this mark was close to the peak 620,000 tons turned out in '56 and considerably higher than the low 557,000 tons made in '57.

Wall Street Wail: U.S. financial circles reportedly have been more than a little disturbed by emergence of a new pattern in Canada's aluminum marketing. Aluminium Ltd. is obviously going all-out to strengthen its worldwide position in fabrication of the metal; the firm has (1) opened a subsidiary-controlled sheet aluminum plant in Spain, (2) issued stock to finance fabricating facilities in England, (3) purchased a Swiss aluminum can manufacturer (Fabrique d'Emballages Métalliques).

Aluminium's spokesmen have calmed fears of U.S. aluminum interests by assuring that the firm has "no present plans to undertake fabricating in the U.S." But observers here haven't overlooked the choice of wording, which clearly leaves the door ajar for a possible change of mind.

Actually, the possibility of Canadian fabrication setting up in the U.S. (or conceivably stepping up fabrication in Canada with across-the-border exports the main objective) isn't the major worry of U.S. aluminum producers. It's but one aspect of the complex competitive lineup emerging in the world aluminum arena.

French Finance More: Aluminum activity in other countries was underscored last week by a $2.5-million loan floated by the French gas-finance outfit, Petrofigaz. Purpose: to add 80,000 metric tons/year to French aluminum capacity by '60.

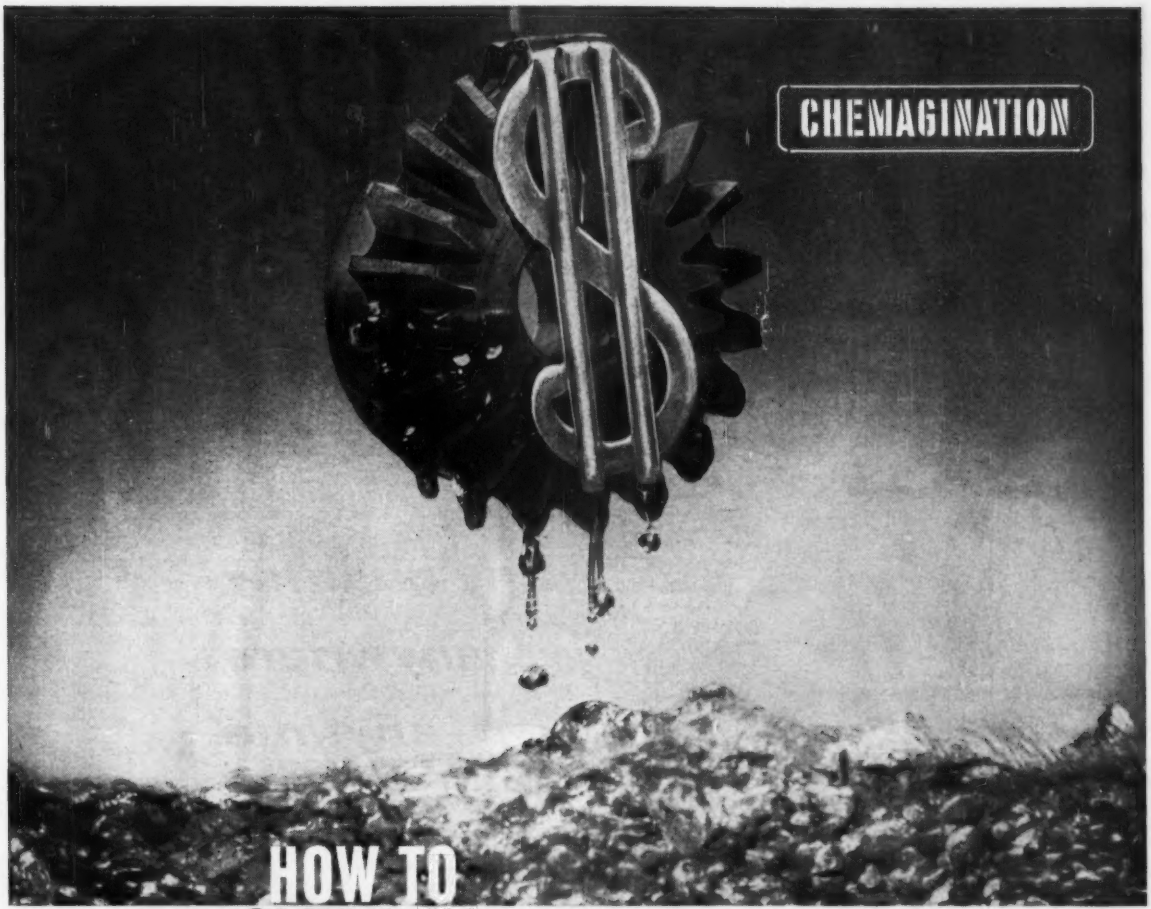
The money will go into construction of (1) a thermal power station, fueled by natural gas from the Lacq field in southwest France and (2) construction of two electrolytic plants. When the Lacq installations start operating in '60, French aluminum production—including 40,000 tons made in French Cameroons—will hit 289,000 tons/year.

Aluminum output in metropolitan France reached 169,000 metric tons in '58; Pechiney, larger of the two French aluminum firms, produced 139,000 tons, Ugine made the remaining 30,000 tons.

An additional 32,000 tons were produced at the Alucam reduction plant in Edea, French Cameroons (in which Pechiney and Ugine hold an 89% interest; the Belgian syndicate Belge de l'Aluminium controls the remaining 11%). France's share was 28,000 tons, which, added to production in metropolitan France, boosted total French aluminum output to 197,000 metric tons in '58; this compares with 171,000 tons made in '57.

The other relatively large-volume aluminum producers made these amounts in '57: West Germany, 169,576 short tons; Norway, 105,434 tons; Japan, 74,931; Italy, 72,962 tons.

Grim as the aluminum picture looks now, there's still a chance that the pessimists will be confounded. The way out could be emergence of one big new application for the metal. And a couple of major new uses could chase all worries of oversupply and foreign competition—even call for more capacity.



HOW TO CLEAN UP ON METAL PARTS

See the grease pouring off that gear?

This is *vapor degreasing*—a process that saves millions of dollars yearly in machining and finishing metals.

How it works—The bubbling bath is a nonflammable solvent, Nialk® brand trichlorethylene—a Hooker product. Heated to 188°F, it boils, forming an invisible vapor cloud. The warm vapor condenses on greasy metal parts suspended in it. Then the solvent rains back into the bath, taking the dissolved grease with it.

Parts come out of the bath clean and *dry*, ready at once for further machining or finishing.

One of the newest advances in vapor degreasing is a system of chemical additives that keeps Nialk trichlorethylene "active" long after other solvents have lost their degreasing ability.

These additives are called *stabilizers*. They keep the bath cleaner, protect the solvent against attack of highly reactive metals such as aluminum and titanium, and permit many more parts to be degreased between bath cleanouts.

Unlike other stabilizers used in trichlorethylene, they do not become depleted.

Nialk trichlorethylene is one of more than 100 Hooker chemicals serving industry today. If you're interested in the extra productivity you can get with it, write us for descriptive literature. Address HOOKER CHEMICAL CORPORATION, 703-1 Forty-seventh Street, Niagara Falls, N. Y.

DUREZ® PLASTICS DIVISION

Safer daylighting for your plant, store, or office is another way you can use chemagination. These panels flood a building with cool diffused light for easier seeing, better production . . . won't shatter or support fire. They're made of glass-reinforced Hetron®, a polyester. For names of fabricators, write DUREZ PLASTICS DIVISION, Hooker Chemical Corporation, 9803 Walck Road, North Tonawanda, N. Y.

HOOKER

HOOKER CHEMICALS PLASTICS

Sales Offices: CHICAGO • DETROIT • KENTON, O. • LOS ANGELES • NEW YORK • NIAGARA FALLS • PHILADELPHIA • TACOMA • NORTH TONAWANDA, N.Y. • WORCESTER, MASS.

In Canada: HOOKER CHEMICALS LIMITED, NORTH VANCOUVER, B. C.

Take a new look at

Bromine

any quantity * *
anywhere
anytime

Tank Car
60,000 and 100,000 lbs. net weight

Tank Truck
14,000 lbs. net weight

Monel Drum
225 lbs. net weight

Glass Bottle
6½ lbs. each 9 a case

Shipments from: *El Dorado, Arkansas, and Manistee and Saint Louis, Michigan*

***Michigan Chemical operates the world's largest bromine tank-car fleet.*

Write for new books on uses and handling of bromine.

MICHIGAN CHEMICAL CORPORATION

610 North Bankson Street
Saint Louis, Michigan • Phone 4511

EASTERN SALES OFFICE: 230 Park Avenue
New York 17, New York Phone MU 3-5480

Market Newsletter

CHEMICAL WEEK
March 14, 1959

Fluctuating price schedules for lead chemicals reflect the unsettled pricing situation plaguing pig lead markets. Late last week, major lead producers boosted pig lead tabs by ½¢ to 11½¢/lb.—the level prevailing before a ½¢/lb. cut just nine days earlier. Erratic lead prices are blamed on scrap dealers who reportedly assumed that lead had bottomed out at 11¢ and withheld offerings in hope of a price upturn. Heavier runs on primary metal strengthened the market price.

Some—but not all—lead chemicals reflect the current boost of pig lead prices. Tabs on these items were upped ½¢/lb. last week in prompt response to higher metal costs. Current quotes: 95% dry red lead in carloads, 13.75¢/lb.; litharge in carloads, 13.25¢/lb.; orange mineral in less than carloads, 16.10¢/lb.

Three lead chemicals did not go up, although the stability of the prices is uncertain. Staying at the recently reduced levels are (carload prices): basic lead carbonate, 17¢/lb.; basic lead silicate, 15.75¢/lb.; basic silicochromate, 19.5¢/lb.

•

Price of 70% aqueous hydrofluoric acid has been boosted 0.75¢/lb. by Pennsalt Chemical to "partially compensate" for higher freight and handling costs. The hike—applicable only to 900-lb. drums, and effective immediately on spot orders and April 1 on contracts—brings the price to 19.25¢/lb. (truckloads only, f.o.b. shipping point with freight allowed to common carrier destination).

Other HF marketers point out that they do not ship in 900-lb. drums, but are selling in 450-lb. drums at the same price—19.25¢/lb.

•

And there's a broad hint of coming price hikes for formaldehyde and urea- and phenol-formaldehyde resins. Reason: recent increase in methanol tabs (*CW Market Newsletter, March 7*). The warning came late last week from Ralph Urich, Reichhold's vice-president of sales, who reported that RCI was following other methanol marketers with a price increase of 4¢/gal.

•

Latest battle in the war between rayon tire cord and nylon cord makers centers about a 30,000-mile road test sponsored by Tyrex, Inc. (the rayon group). The test, Tyrex said, proved that truck tires made with viscose tire cord gave 21.7% longer tread wear than nylon tires.

There was immediate rebuttal. Key point: the charge that the test tires, specially constructed, were not indicative of the performance of regular production tires of either type. The market fight is plainly far from over.

The Tennessee Valley's first titanium dioxide plant will probably start production within a month. Du Pont's new, $30-million installation at Johnsonville, Tenn., has weathered shakedown tests. Two recently authorized additional facilities remain to be completed.

•

A new, $300,000 lignin liquor processing plant went onstream last week at Appleton, Wis. "Useful products in dry, powdered form" will be made from lignin liquor obtained from sulfite pulping operations of Consolidated Water Power & Paper.

•

A new, clinging polyethylene may give Dow's Saran Wrap a run for the money. The new film, called Pollymaster Cling Wrap, is marketed by Cello-Masters (New York), is made from Spencer resins. It's claimed to be suitable for frozen-food packaging and for household use, will reportedly have a 4-8¢/roll (retail) price advantage.

•

Dollar sales of soaps and detergents broke all records in '58, according to the annual survey of the Assn. of American Soap & Glycerine Producers. Sales of 67 manufacturers totaled more than $1.04 billion, 4.3% more than in '57, also a record year. Total volume was close to $4.09 million lbs. (near the '57 level).

Syndets accounted for 72.2% of total sales—2.95 billion lbs., worth almost $716 million; that's 1.2% greater tonnage and 4.7% greater value than in '57. Liquid syndets reached a new high; '58 sales were 430.7 million lbs., 18.5% more than in '57.

But soap sales are still declining. They were down 4.3% in '58, 1.138 billion lbs., worth about $324.8 million.

•

Communist China will start up 68 new chemical works specializing in acid and soda production, and will build 40 more such projects in '59, according to a Peking radio broadcast picked up in Tokyo.

The Chinese also claim a 25% boost of acid and soda output in '58, and plan to develop resources of natural soda in Inner Mongolia and in Northwestern provinces.

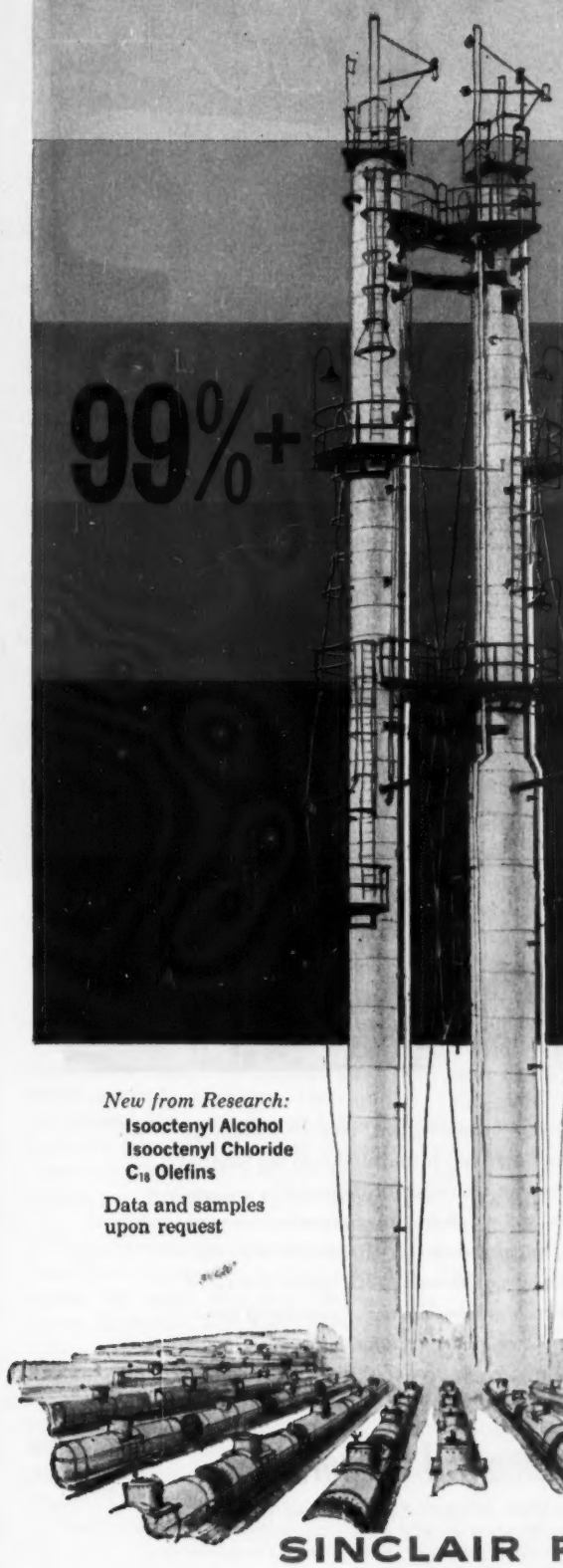
SELECTED PRICE CHANGES — WEEK ENDING MARCH 9, 1959

	Change	New Price
UP		
Capric acid, dms.	$ 0.02	$ 0.335
Caprylic acid, dms.	0.02	0.335
Peanut oil, crude, tanks	0.0025	0.12
DOWN		
Eucalyptol, USP, cns, dms.	0.05	0.90
Sandalwood oil, cns.	0.25	13.25
Tin, metal (Straits)	0.01625	1.0325

All prices per pound unless quantity is quoted.

Another Sinclair First—

99%+ PROPYLENE IN QUANTITY



New from Research:
Isooctenyl Alcohol
Isooctenyl Chloride
C_{18} Olefins

Data and samples upon request

Now you can get 99%+ propylene in large quantities. *For the first time* this high-purity raw material—essential to polypropylene manufacture—is available in commercial volume. Whatever your needs—cylinder, transport or tankcar—Sinclair can make prompt shipments direct from their new unit at Marcus Hook, Pa.

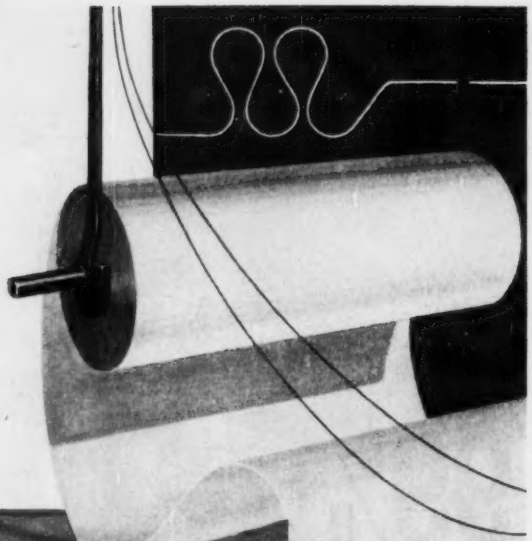
Take advantage of this new high-purity product. Just write or call us for complete information and samples.

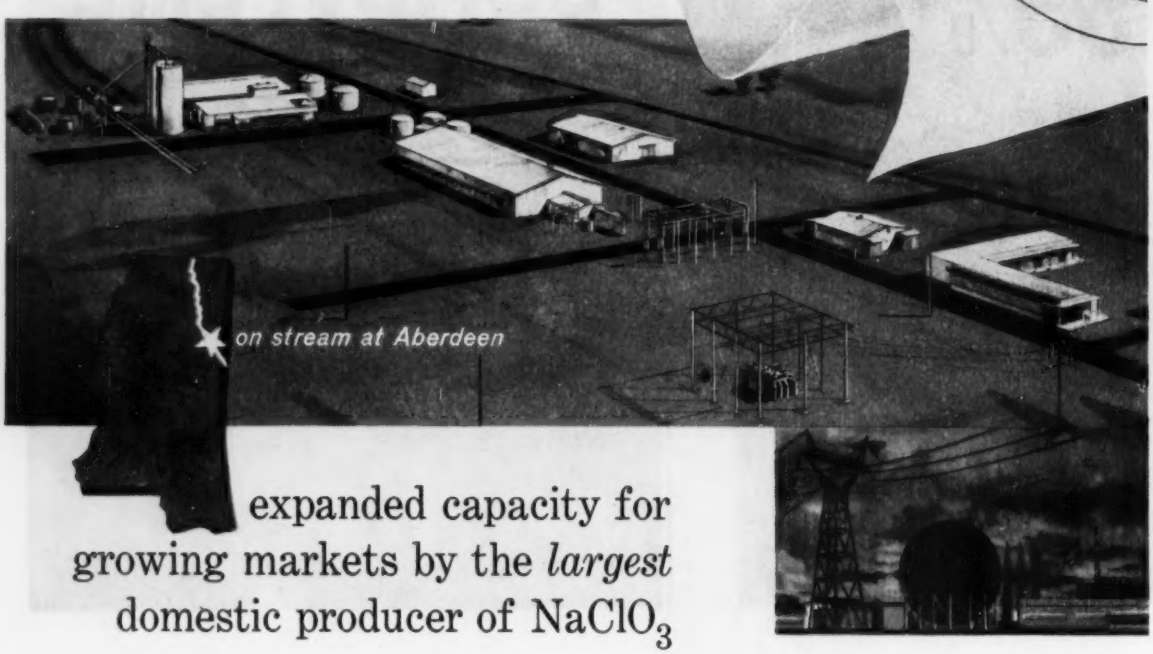
SINCLAIR PETROCHEMICALS, INC.

Subsidiary of Sinclair Oil Corporation

600 Fifth Ave., New York 20, N. Y.—Phone Circle 6-3600 • 155 North Wacker Drive, Chicago 6, Illinois—Phone Financial 6-5900

Now! Trona®
SODIUM CHLORATE
from Aberdeen, Mississippi





expanded capacity for growing markets by the *largest* domestic producer of $NaClO_3$

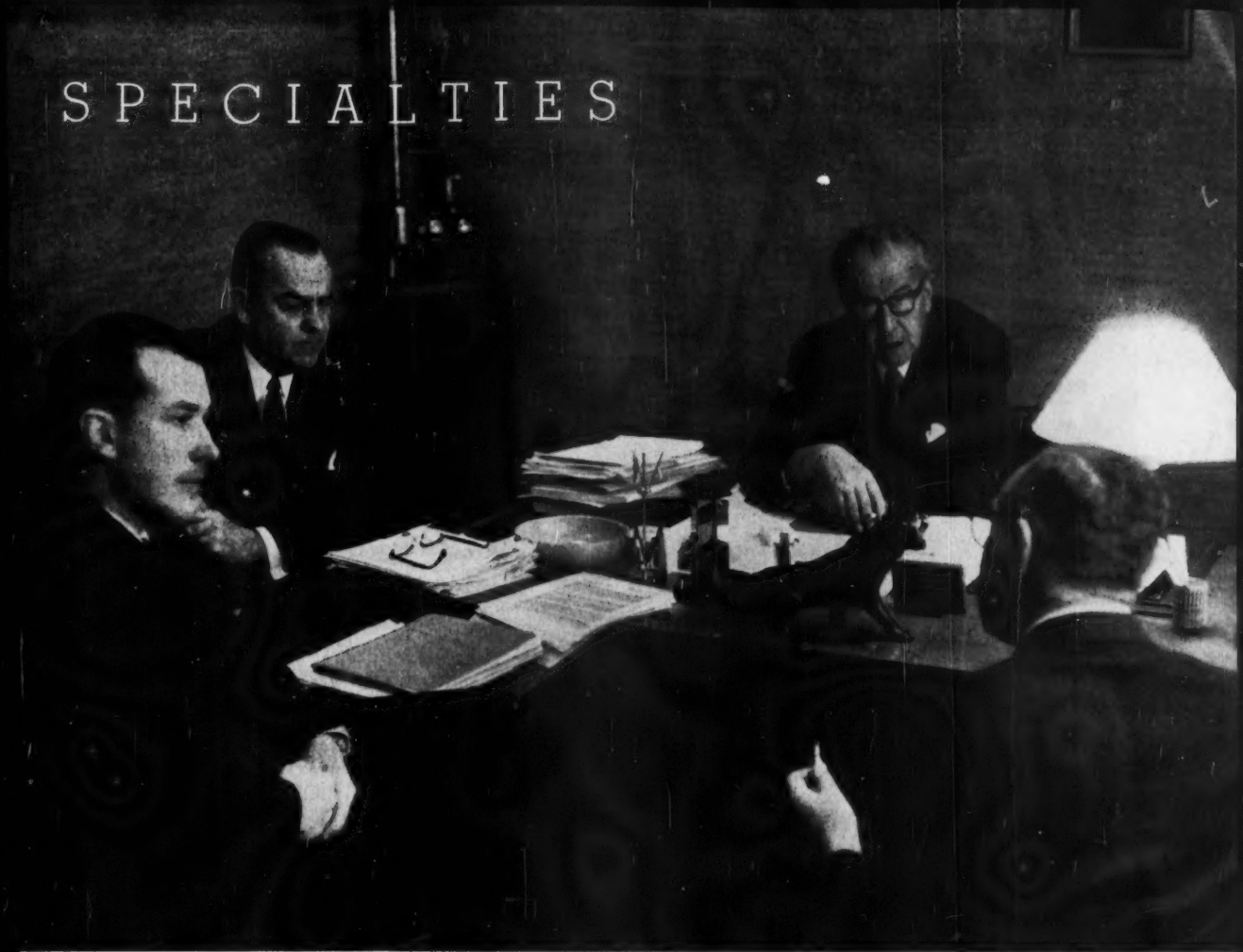
The big news in sodium chlorate is TRONA's new electrochemical plant, now on stream at Aberdeen, Mississippi. This latest AP&CC facility provides faster and better service to the South's growing pulp and paper production centers, as well as further assurance of dependable sodium chlorate supply for other important markets in such fields as agriculture, uranium ore processing and solid propellant fuels. Aberdeen's readily expandable, initial capacity of 15,000 tons per year, added to the $NaClO_3$ production capability of Trona's Henderson, Nevada, plant makes American Potash & Chemical Corporation the largest domestic supplier of sodium chlorate...capable of meeting *all demands* from expanding commercial and military users. *Further information on Trona's sodium chlorate service and production capabilities at Aberdeen is available from your nearest AP&CC branch office.*

TRONA

American Potash & Chemical Corporation

3000 WEST SIXTH STREET, LOS ANGELES 54, CALIFORNIA
99 PARK AVENUE, NEW YORK 16, NEW YORK
OFFICES: LOS ANGELES, NEW YORK, CHICAGO, SAN FRANCISCO, PORTLAND (ORE.), ATLANTA, COLUMBUS (O.), SHREVEPORT

Producers of: BORAX • POTASH • SODA ASH • SALT CAKE • LITHIUM • BROMINE • CHLORATES • PERCHLORATES • MANGANESE DIOXIDE
THORIUM • CERIUM • RARE EARTHS • *and other diversified chemicals for Industry and Agriculture*



CW PHOTO—LIONEL CRAWFORD

International Flavors' U.S. management:* Their industry will soon taste public ownership for first time.

Welding Stronger Flavor-Fragrance Union

The merger of Van Ameringen-Haebler, Inc. (New York), and Polak & Schwarz N.V. (Zaandam, Holland) into International Flavors and Fragrances a few weeks ago could trigger some sweeping changes in the $150-million/year flavor and fragrance business. Possibility: a wave of mergers among companies seeking to improve their financial—and competitive—positions. The move may also spur research in flavor and odor science.

To some observers of the flavor-fragrance business, both moves are overdue. While other industries have evolved, the flavor-fragrance field bears many of the features that characterized it shortly after World War I.

Chief reason: most flavor houses are small firms—either don't have money to make changes, or don't want to.

Companies such as Givaudan-Delawanna, Norda, Firmenich, Fritzsche Bros., and International Flavors are a few examples of firms in the business that have adequate financial resources to break out of the restrictions of their field.

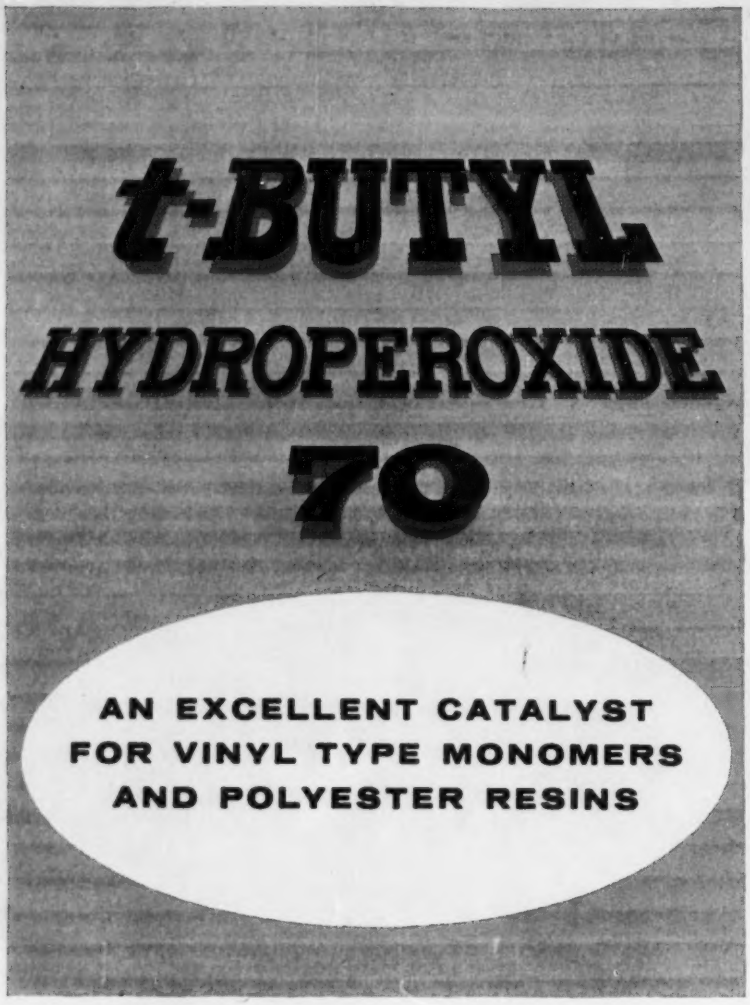
They are adjusting to new demands on their industry. The consuming industry's increasing use of synthetics results in a greater demand for research demanding costly equipment such as gas chromatographs and infrared spectrophotometers.

Basic Needs: Along with the consumers' trend to the synthetics has been the manufacturers' movement toward a more basic position in chemical raw materials. And that takes money too. Putting together equipment for making special alcohols, for instance, means a sizable financial outlay.

Big customers of the flavor-perfume makers, moreover, are becoming more demanding in their requirements. They want improved items, insist on stable prices and an assured source of supply. All this points in the direction of synthetics, away from the capriciousness characteristic of materials from animal and vegetable sources. Either politics or weather, for instance, can upset an essential-oil supply picture overnight.

Other factors changing the industry, calling for more cash outlays and making it harder for smaller companies to keep pace, are: more rigid demands by the Food & Drug Administration for expensive toxicity testing; the trend toward specialization in creative research (for example, some companies' perfumers do nothing but research baby products); and the need

*Left to right: Leroy Frantz, treasurer; Charles Walker, president; A. L. Van Ameringen, board chairman; Felix Goudsmit, vice-president (export).



SPECIFICATIONS

t-BUTYL HYDROPEROXIDE	71-73%
ACTIVE OXYGEN	12.6-13.0%

THERMAL DECOMPOSITION DATA

Solvent	Concentration (Moles/liter)	Temperature (°C)	Half-Life (Hours)
Benzene	0.2	100	165.0
		115	21.5
		130	3.2

LUCIDOL t-BUTYL HYDROPEROXIDE-70 is readily soluble in most synthetic monomers and can be used as a polymerization catalyst in bulk and emulsion processes with monomers such as the styrenes or methacrylates and with polyester resins. It is also useful in other applications requiring a stable, weakly acidic, liquid organic oxidizing agent.

Write for Data Sheet #26

LUCIDOL DIVISION

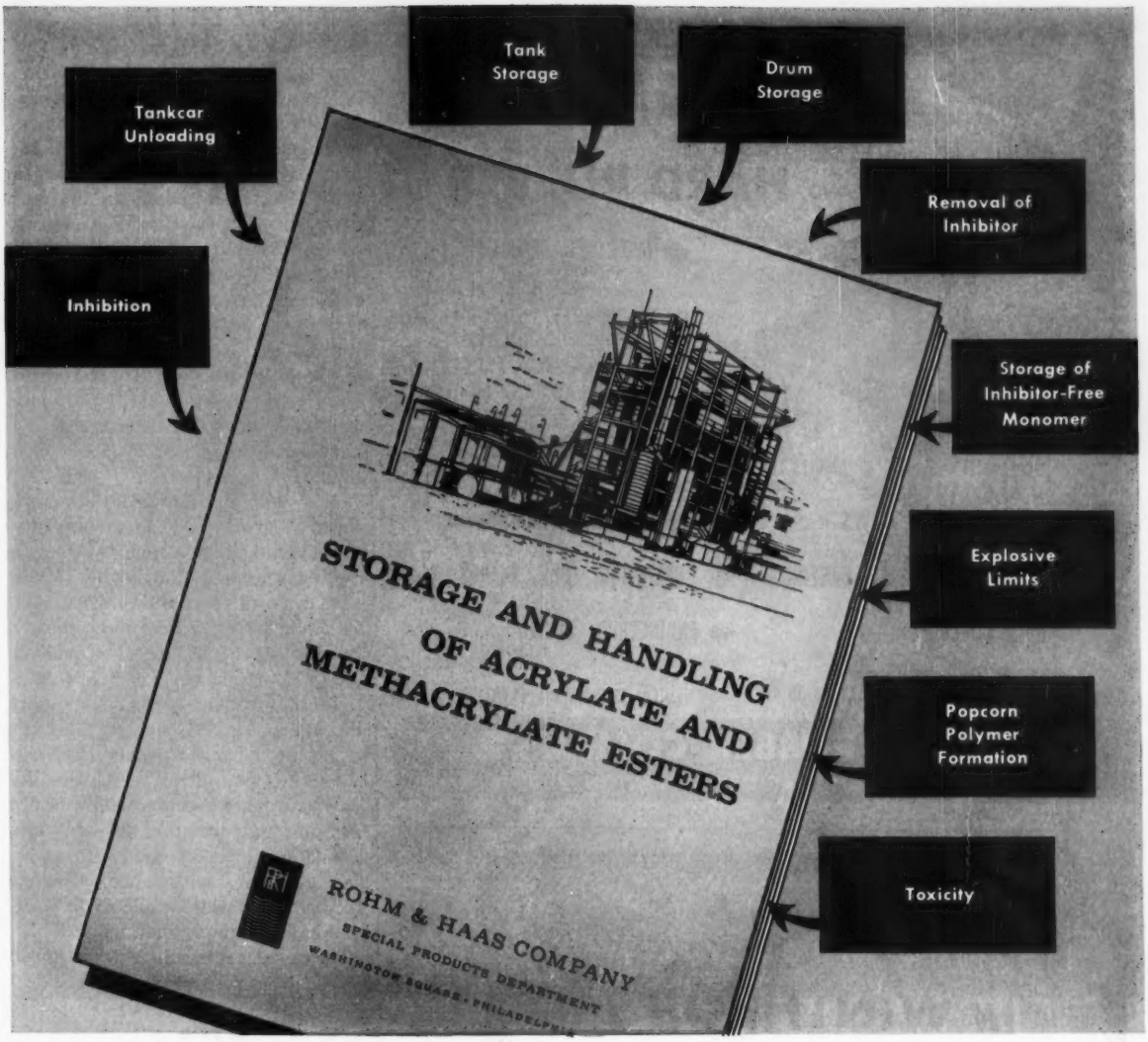
WALLACE & TIERNAN INCORPORATED
1740 MILITARY ROAD
BUFFALO 5, NEW YORK

to have on-the-spot compounding operations to supply U.S. companies manufacturing overseas.

Look at Me: Traditionally there's been a hush-hush air about both the business and the technical side of the flavor-fragrance field. This can be ascribed to the European origin of most of these companies. For International Flavors, however, that may change soon. Plans are under way for the company to go to public ownership—as early as this fall. When that happens, federal requirements will necessitate more public disclosure of the dollars-and-cents aspects of the business.

Without disclosing the full financial aspects of its merger, the company has shown some details of its new operation. From the Van Ameringen setup (stronger of the two in fragrances), the company gets manufacturing facilities in Union Beach, N.J. (flavors and aromatic raw materials), and Elizabeth, N.J. (mostly flavors). VA's old Paris and Toronto plants were mostly compounding operations. Polak & Schwarz, heavier in flavors, will supply major manufacturing facilities in Zaandam and Hilversum, Holland, smaller manufacturing facilities in England and compounding operations in most European nations, Argentina, Brazil, Indonesia, South Africa and the U.S. P&S's operation in Canada has already been combined with the Van Ameringen operation. Obviously, subsidiaries in all these countries will make it easier for the parent company to get around tariffs, currency restrictions, and the like—and it will give them a competitive edge over U.S. companies.

Who's on Top: Ostensibly, the merger is of two equals. But there is little doubt in the trade that the American interests will be running the show. Van Ameringen acquired the outstanding capital stock of Polak & Schwarz International N.V. through an exchange of capital stock. In linking up with P&S, the 68-year-old Arnold Van Ameringen acquired a company for which he once worked as salesman some 40 years ago. He will serve as chairman of the board of International Flavors. Charles Walker, 51, president, has been with Van Ameringen since '53 after serving with Merck & Co. and Pfizer. Constant Brummer, '59, for many years a managing director of Polak &



Complete Engineering Service on Acrylic Monomers

Copolymerization with acrylic monomers offers a variety of advantages to producers of polymers based on such monomers as vinyl chloride, vinyl acetate, vinylidene chloride, acrylonitrile or styrene. For example, internal plasticization, improved heat and light stability, faster polymerization rate and better adhesion.

When you choose Rohm & Haas as your supplier of acrylic monomers, engineering services are part of the "package". Among these is the booklet illustrated above, offering important technical information on storage and handling of acrylic monomers, based on Rohm & Haas' long commercial experience. Write to Dept. SP-1 for your free copy.

Chemicals for Industry

ROHM & HAAS COMPANY

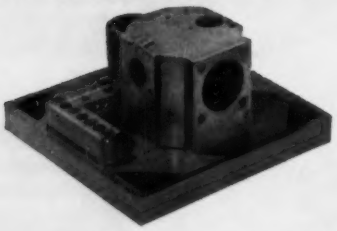
WASHINGTON SQUARE, PHILADELPHIA 5, PA.

Representatives in principal foreign countries

METHYL ACRYLATE • ETHYL ACRYLATE • BUTYL ACRYLATE • 2-ETHYLHEXYL ACRYLATE • METHYL METHACRYLATE • ETHYL METHACRYLATE • BUTYL METHACRYLATE • HEXYL METHACRYLATE • DECYL-OCTYL METHACRYLATE • LAURYL METHACRYLATE • STEARYL METHACRYLATE • GLACIAL METHACRYLIC ACID • GLACIAL ACRYLIC ACID

LRC LUZERNE

PLASTICS AND HARD RUBBER



◆ MOLDED PARTS

Specialists in heavy intricate CUSTOM PARTS, Heat-Resistant HARD RUBBER (264°F. — A.S.T.M.) PVC and other PLASTICS, Long and short runs.

PVC PART 14" square x 9" high 15 LBS.

◆ PIPE, FITTINGS, VALVES
◆ FABRICATION, MACHINING
◆ LINING TANKS, PIPE, CASTINGS
◆ SHEET, ROD, TUBE, SHAPES
◆ ROLL COVERING
◆ ENGINEERING DESIGN

WRITE Dept. CW FOR INFORMATION OR SEE US IN CHEMICAL ENGINEERING CATALOG

LUZERNE RUBBER COMPANY
MAIN OFFICE AND FACTORY — TRENTON, N. J.

EFFECTIVE MARCH 1
NEW PRICES • NEW PRODUCTS

IN WINTHROP'S
1959 PRICE LIST

OVER 100 BULK CHEMICALS

INCLUDING

PHARMACEUTICALS such as DIPYRONE, PHENYLEPHRINE
INTERMEDIATES such as DIPHENYLACETONITRILE, MALONONITRILE
PYRAZOLONES such as PHENYL CARBETHOXY PYRAZOLONE, PHENYL METHYL PYRAZOLONE
AMINO ACIDS and other BIOCHEMICALS

MANY PURCHASING AGENTS, PRODUCTION MANAGERS AND RESEARCH DIRECTORS HAVE BEEN AMAZED AT THE WEALTH OF CHEMICAL STOCKS AVAILABLE FROM WINTHROP

If you want something special be prepared

FILL OUT THE COUPON FOR PROMPT MAILING.

Winthrop Laboratories
Special Chemicals Dept.
1450 Broadway, New York 18, N.Y.
Dept. CW-39

NAME .....
FIRM .....
STREET ADDRESS .....
CITY ..... ZONE ..... STATE .....

SPECIALTIES

Schwarz, is executive vice-president. Adolph Schwarz, 62, also a managing director of P&S since '46, is vice-president, along with Waldo Reis, 55, who has been with Van Ameringen since '34. Other officers in the new setup are Sidney Friend, secretary; Leroy Frantz, Jr., treasurer; T. H. Rynberg, assistant secretary; D. A. Schwarz, assistant treasurer. The combined operations will employ approximately 2,000.

Combined sales for the entire operation will probably be around $30 million annually. Net worth of the combine is estimated at about $10 million.

The new orientation of International Flavors and Fragrances towards synthetic materials will mean more expansion of the already sizable production of fragrance raw materials at Union Beach (where the company has large-scale facilities for making phenyl ethyl alcohol).

With manufacturing facilities in the European "Common Market" area, the United Kingdom and the Western Hemisphere, and with its own raw-material output and a heavy investment in research, the new firm should be a potent contender in its field. Moreover, with public financing, the company will be able to pay for the basic research that will supplement product research to which most of the industry is now confined.

PRODUCTS

Liquid Molder: Adhesive Products Corp. (1660 Boone Ave., New York) is offering a new self-vulcanizing liquid molding compound, called Admold Molding Latex, The new material is said to permit reproduction of objects with minute undercuts and projections.

•

Adhesive for Foam: Bondmaster G459, a nonflammable adhesive for bonding polystyrene foams to themselves and other materials (wood, concrete, metal), is now being marketed by Rubber and Asbestos Corp. (225 Belleville Ave., Bloomfield, N.J.). The water-dispersed adhesive is said to maintain bond strength throughout a temperature range of —35 to 250 F and to sustain short-time exposure up to 350 F. The company says its new product can also be used for thermal insulation and sound-deadening.

It's part of every shipment of Pittsburgh Activated Carbon

WHETHER you're planning a completely new adsorption system . . . or trying to get better results from your existing system . . . Pittsburgh stands ready to offer you "in-plant" technical service to help increase adsorption efficiency, reduce costs and develop higher product quality.

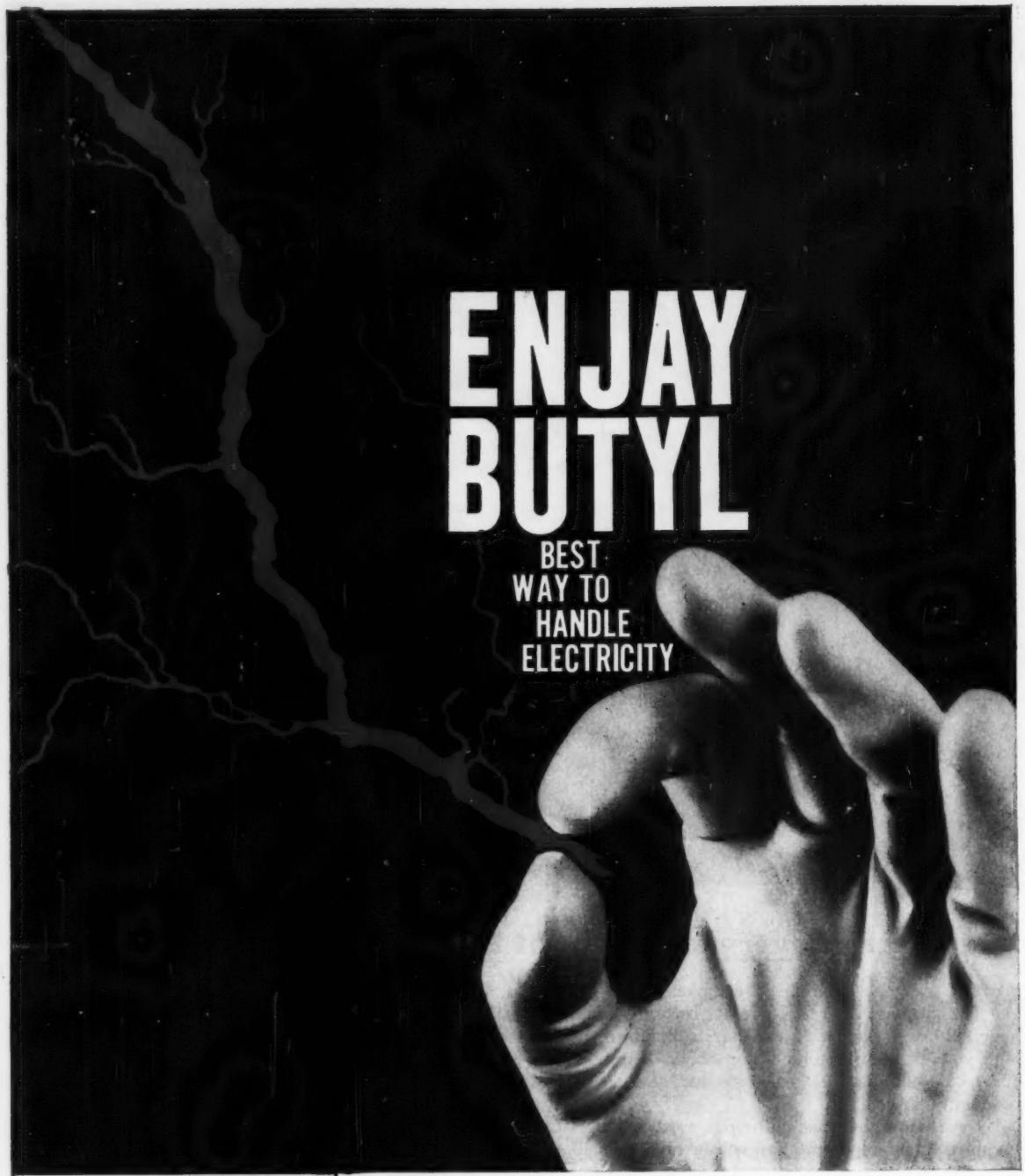
By working right along with your engineers, a Pittsburgh technical representative will be able to evaluate and advise on improvements in your present system . . . or help you set up a small scale laboratory column to prove how Pittsburgh Granular Carbons can dramatically increase the efficiency of your adsorption system.

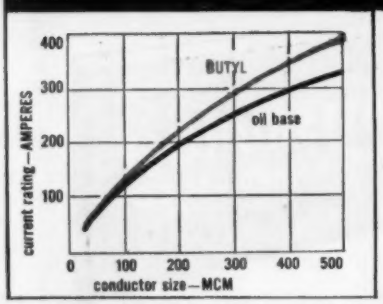
Call or write today. An experienced Pittsburgh technical representative will be glad to discuss your adsorption problems . . . without obligation.

FREE BOOKLET

Describes types and various applications of Pittsburgh Activated Carbons, in both liquid and vapor phase adsorption. For your free copy, write to Dept. F.

ACTIVATED CARBON • COAL CHEMICALS • PLASTICIZERS • PROTECTIVE COATINGS • PIG IRON • COKE • FERROMANGANESE • CEMENT





Butyl's outstanding resistance to heat allows considerably higher currents for any given conductor size.

Of all vulcanizable rubbers, Enjay Butyl offers the best electrical and dielectric properties. Butyl is the ideal material for wire and power cable, transformers, tapes, busbars and other insulation applications.

Butyl *also* offers outstanding resistance to weathering and sunlight . . . chemicals . . . abrasion, tear and flexing . . . superior damping properties . . . unmatched impermeability to gases and moisture.

Find out how this versatile rubber can improve your product. Call or write the Enjay Company, today!

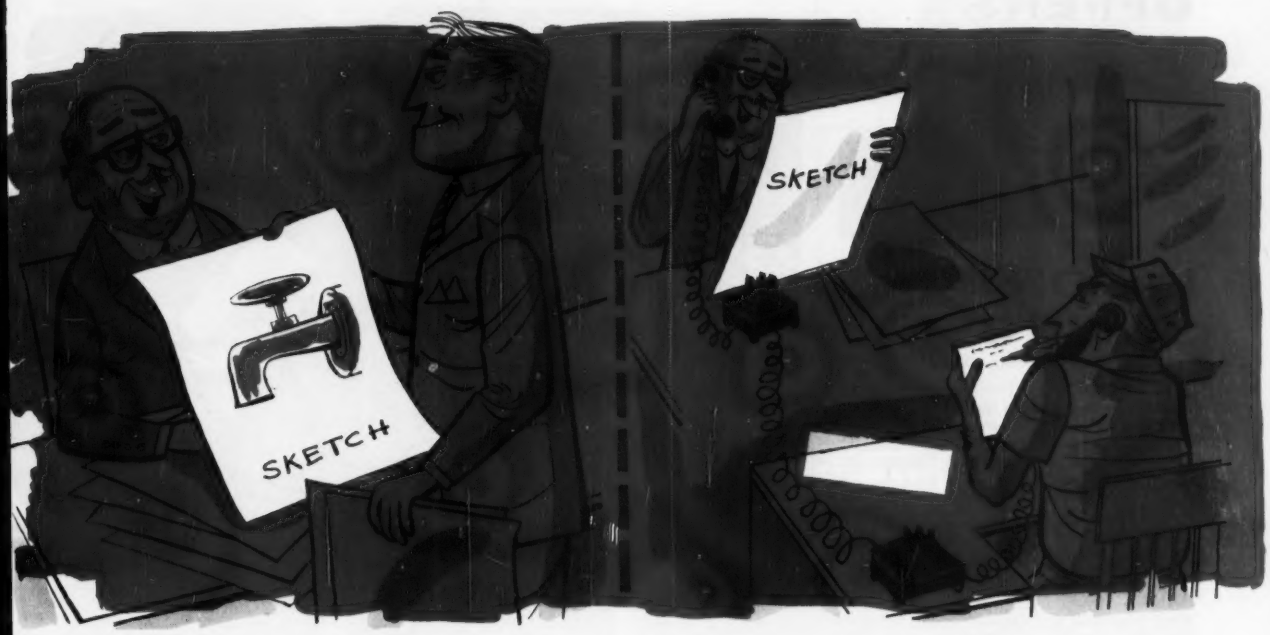
ENJAY® BUTYL

ENJAY *Pioneer in Petrochemicals*

ENJAY COMPANY, INC., 15 West 51st Street, New York 19, N. Y.

Akron • Boston • Charlotte • Chicago • Detroit • Los Angeles • New Orleans • Tulsa

Vendor woos chemical maker ***Maker calls 'alley shop' . . . (turn page)***



Do Equipment Makers Have a Valid Beef?

To discover the outcome of the drama unfolding above, most people will turn the page as suggested. But equipment makers won't even bother to moisten a finger for the flip. They are so familiar with the sad outcome —equipment they designed being given to someone to build—that many equipment makers are puzzling this week over a course to prevent future occurrences.

Sure bet: a tightening-up on the free engineering services they give chemical companies when bidding on equipment. Equipment makers are beginning to weigh these services more carefully, may decide to limit, or even withhold, them in some cases.

This toughening attitude is mirrored in the remark of a conferee at a recent meeting of the Chicago Chemical Equipment Sales Engineers Assn. to discuss the problem. "Engineering service costs money. And while we'll figure it in the cost of any serious effort, there's got to be a limit to how much we're willing to do without assurances of a sales payoff," said a sales engineer.

The CESEAC group took the stand that potential customers must be weaned away from the idea that they can get a full set of design proposals, drawings, and specifications, plus equipment testing and process pilot-planting without obligating themselves in any way to the vendor providing these services.

Double Bidding: At the root of the equipment makers' problem is the multiple bidding that is used widely by the chemical industry. In ordering a heat exchanger, for example, a chemical company will likely ask several (usually three) exchanger manufacturers to bid for a job based on certain specifications.

Often, however, the chemical maker's specifications are general, can be met by any number of different designs. And, when the chemical firm receives the design proposals it may pick one or, as often happens, make a composite design.

The usual procedure is then to send out revised specifications based on the final design to three exchanger makers for rebidding. The bidding at this point determines the awarding of the order.

Equipment Makers' Plaints: All too often, say the vendors, the firm that has been most generous with its engineering is at a competitive disadvantage when it comes to bidding because it has higher engineering services to write off. And, in addition to losing the job, it often sees its hard-won know-how fall into the hands of competitors when the final specifications, which may incorporate part or all of its original design, are sent out

A SKILLED HAND IN CHEMISTRY
. . . AT WORK FOR YOU

NEW METASAP® PACKAGE OFFERS

IMPORTANT SAVINGS!

Many Metasap customers are now receiving metallic soap in new, improved containers—25-lb. deaerated bags. The old packaging—bulky 50-lb. cardboard cartons—has been scrapped. This modern way offers important savings at each stage of your operation.

SHIPPING:
The new bags stack without sag—no more crushed carton corners!

HANDLING:
With just half the former weight, plus a shape that permits easy handling, these new units are better for pallet stacking and unit load handling.

STORAGE:
You save a precious 20% in storage space.

USE:
Compact packing assures you less dusting (and less waste) when you pour.

DISPOSAL:
Fold and toss away—no more bulky cartons to contend with.

If you are not already using Metasap stearates in your products, you will find it profitable to switch. Metasap is the oldest and largest producer of metallic soaps in the nation . . . offering a skilled research staff, plus the facilities to tailor formulations to match your every need. Now you can bag bigger profits . . . with Metasap metallic soaps!

Write us for full information. Our Technical Service Department will gladly make recommendations based upon your specific requirements. Metasap Chemical Company, 60 Park Place, Newark, N.J.

METASAP CHEMICAL COMPANY®

METALLIC SOAPS FOR THE PAINT INDUSTRY

A subsidiary of NOPCO®

Harrison, N.J. • Richmond, Calif. • Cedartown, Ga.
Boston, Mass. • Chicago Ill. • London, Canada

Vendor is left out in rain

by the chemical maker for final bids.

"This is especially difficult to swallow if some 'alley shop' gets into the picture," says one sales engineer. "The alley shop doesn't have to worry about design and research facilities. He just gets your design from the customer you've been courting, then beats your ears off with his price."

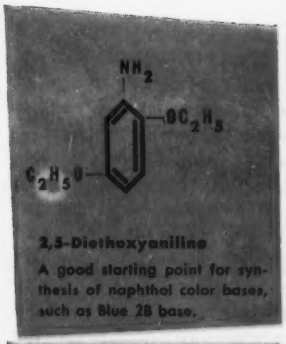
For example, a manufacturer of mixing equipment developed an aeration scheme for a Midwestern paintmaker seeking a water-pollution-control plant. The equipment firm worked up drawings and specs, built and ran a pilot plant to prove out the method. The job went to another firm—which built an identical system at a fraction of the price quoted by the designer.

Chemical Makers' Side: Some chemical firms maintain fairly large engineering staffs, design most of the not-off-the-shelf equipment items themselves. But most firms admit that they rely heavily on vendor engineering, and follow the procedure of double bidding outlined above.

As one plant engineer put it: "Our staff isn't large enough for us to fully design equipment; so when we ask for bids, we can't be definitive enough in our original specifications. Naturally, we pick the best design we can get, but our final design is usually a composite of the best parts of those submitted. And, when we send out the final specs, we obviously aren't going to take the high bidder—particularly if he's way out of line."

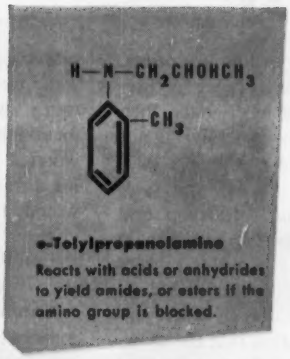
The chemical firms contend that designs of one equipment maker aren't sacred, may be shown to others during the course of the bidding procedure. They say it's one of the things equipment firms must live with as part of the business. Says one chemical company vice-president: "On a short-term basis, it may be rough for some equipment firms. But over the long haul, it can only mean over-all equipment improvement; and only those who can keep on their toes will survive."

Defense Inadequate: Vendors have



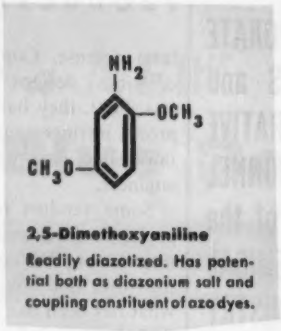
2,5-Diethoxyaniline

A good starting point for synthesis of naphthol color bases, such as Blue 2B base.



o-Tolylpropanolamine

Reacts with acids or anhydrides to yield amides, or esters if the amino group is blocked.

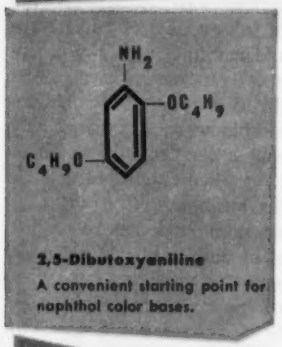


2,5-Dimethoxyaniline

Readily diazotized. Has potential both as diazonium salt and coupling constituent of azo dyes.

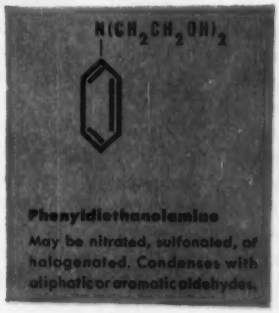
Phenylethylethanolamine

Undergoes typical reactions of tertiary amines as well as esterification, nitration, halogenation and sulfonation.



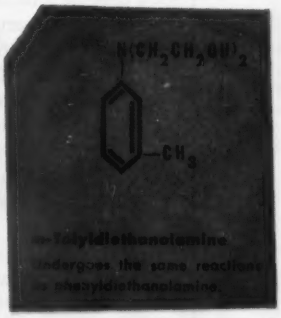
2,5-Dibutoxyaniline

A convenient starting point for naphthol color bases.



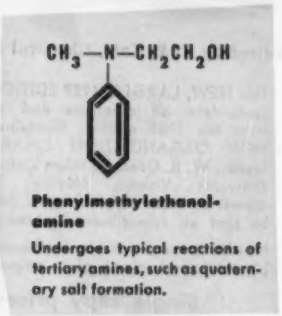
Phenyldiethanolamine

May be nitrated, sulfonated, or halogenated. Condenses with aliphatic or aromatic aldehydes.



o-Tolyldiethanolamine

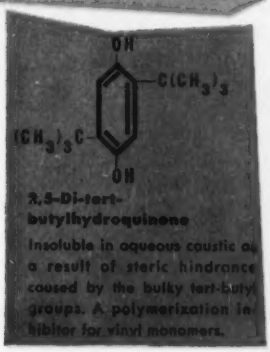
Undergoes the same reactions as phenyldiethanolamine.



Phenylmethylethanolamine

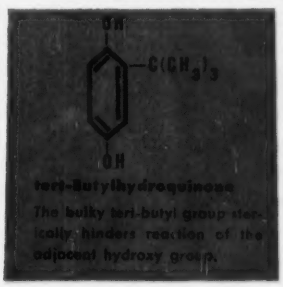
Undergoes typical reactions of tertiary amines, such as quaternary salt formation.

Eastman aromatic intermediates



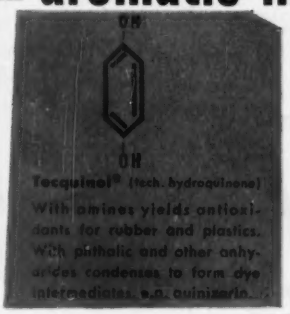
2,5-Di-tert-butylhydroquinone

Insoluble in aqueous caustic as a result of steric hindrance caused by the bulky tert-butyl groups. A polymerization inhibitor for vinyl monomers.



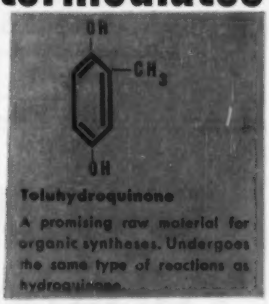
tert-Butylhydroquinone

The bulky tert-butyl group sterically hinders reaction of the adjacent hydroxy group.



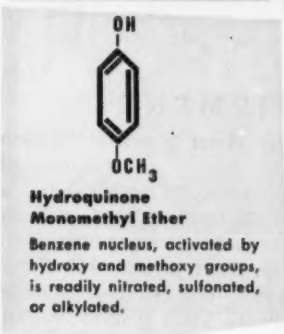
Tecquinol® (tech. hydroquinone)

With amines yields antioxidants for rubber and plastics. With phthalic and other anhydrides condenses to form dye intermediates, e.g. quinizarin.



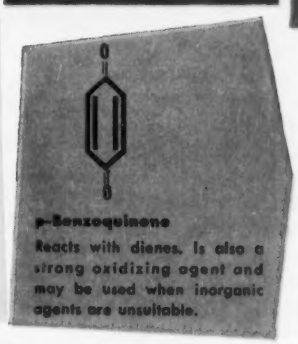
Toluhydroquinone

A promising raw material for organic syntheses. Undergoes the same type of reactions as hydroquinone.



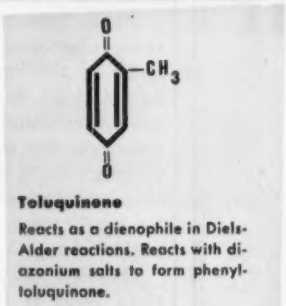
Hydroquinone Monomethyl Ether

Benzene nucleus, activated by hydroxy and methoxy groups, is readily nitrated, sulfonated, or alkylated.



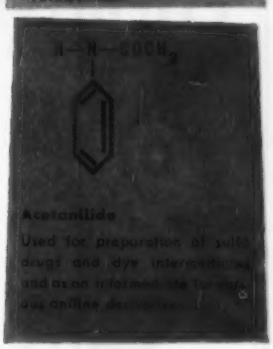
p-Benzoquinone

Reacts with dienes. Is also a strong oxidizing agent and may be used when inorganic agents are unsuitable.



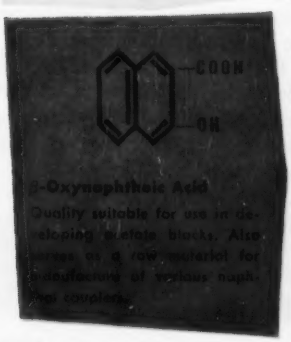
Toluquinone

Reacts as a dienophile in Diels-Alder reactions. Reacts with diazonium salts to form phenyltoluquinone.



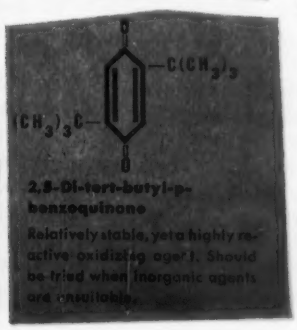
Acetanilide

Used for preparation of sulfa drugs and dye intermediates and as an intermediate for making aniline derivatives.



3-Oxynaphthoic Acid

Quality suitable for use in developing acetate blacks. Also serves as a raw material for manufacture of various naphthol couplers.



2,5-Di-tert-butyl-p-benzoquinone

Relatively stable, yet a highly reactive oxidizing agent. Should be tried when inorganic agents are unsuitable.

Eastman CHEMICAL PRODUCTS, INC.

KINGSPORT, TENNESSEE, subsidiary of EASTMAN KODAK COMPANY

SALES OFFICES: Eastman Chemical Products, Inc., Kingsport, Tennessee; Atlanta; Chicago; Cincinnati; Cleveland; Framingham, Mass.; Greensboro, N. C.; Houston; New York; St. Louis. **West Coast: Wilson Meyer Co.,** San Francisco; Los Angeles; Portland; Salt Lake City; Seattle.

CORPORATE DIAGRAMS and ADMINISTRATIVE PERSONNEL of the CHEMICAL INDUSTRY

Edited by *K. R. Kern*, Chemical Economist

This NEW, LARGER, 1959 EDITION brings up-to-date all diagrams and personnel from the 1958 edition. Contains MANY NEW ORGANIZATION CHARTS: Celanese, W. R. Grace, Lithium Corp., Merck, American Viscose, Neville Chemical, others. Includes supplement to '59 issue to be sent all subscribers, September, 1959.

Now in striking, durable, leatherette cover, plastic bound, glossy plate pages.

Single copy price:
$20.00 postpaid

A publication of

CHEMICAL ECONOMIC SERVICES
Princeton, New Jersey
WAlnut 1-8468

SODIUM SULPHATE
(Anhydrous)

SALT CAKE

PRIOR CHEMICAL CORPORATION
420 LEXINGTON AVENUE
NEW YORK 17, N. Y.

CABLE: PRIORCHEM NEW YORK
PHONE: LExington 2-9811

PRODUCTION

little defense. Copywriting of prints, drawings, designs and specs is useless. First, they have to discover, then prove, infringement—expensive if not impossible, says one equipment sales engineer.

Some vendors mark drawings and prints as their property. But, shrugs one vendor, "We've received bid drawings with title box cut off. You know what has been there—some other vendor's hopeful indication that the drawing was his property. In fact, one oil company frankly requests equipment makers to refrain from marking proposals with statements declaring ownership. They plan to use the proposals for competitive bids without the nuisance of lawsuits."

Limiting Services: Some equipment manufacturers feel that their only recourse is to charge potential clients for major testing and engineering involved in drawing up proposals. The charge could be made rebatable, credited against the cost of the equipment if the order is received within a fixed period of time. But other vendors maintain that charging for engineering service simply removes any sense of obligation that the potential client may feel. "If he feels he's paying for the data, he'll feel entirely free about passing it around for competitive bidding. And, you run the risk of becoming a consulting and testing service instead of an equipment manufacturer," says one defender of this view.

Another possibility: some equipment vendors are considering designing as much of the equipment as possible as a package, holding off on the real process engineering until they have assurances that the job is theirs. This approach might work with items such as drive systems, gears and bearings, but would still leave many items that couldn't be packaged.

Chemical company reaction to these ideas is that they all would have the effect of limiting the amount of engineering services offered. And the result would do the equipment maker more harm than good. Says an engineer from one chemical firm: "Anything designed to make it more difficult for us to get the free engineering services that we rely on—and about which the vendors always make it a point to advertise—would force us to either add to our engineering staff or request work from engineering firms. If we add to our staff, we could certainly make a lot more use of the back-alley equipment fabricator these fellows seem so worried about. And, as for engineering firms, a certain number of them wouldn't mind doing, say, heat exchanger design work in addition to the straight process work for which they are noted."

Careful Screening: Many chemical makers agree with one point the equipment sales engineers make: vendors should carefully screen prospective clients. Says one sales engineer: "We ought to offer as little engineering as possible whenever there's any doubt about a client. And, we ought to go all out when convinced the fellow means business."

Another sales engineer adds: "At the outset of any sales call, we must make clients fully aware of the cost and effort poured into engineering service by a vendor. We'll have to get them to see our side of the picture, get them to develop a sense of obligation for the engineering services. Now, they don't really understand what you're putting out, or they couldn't treat it so lightly."

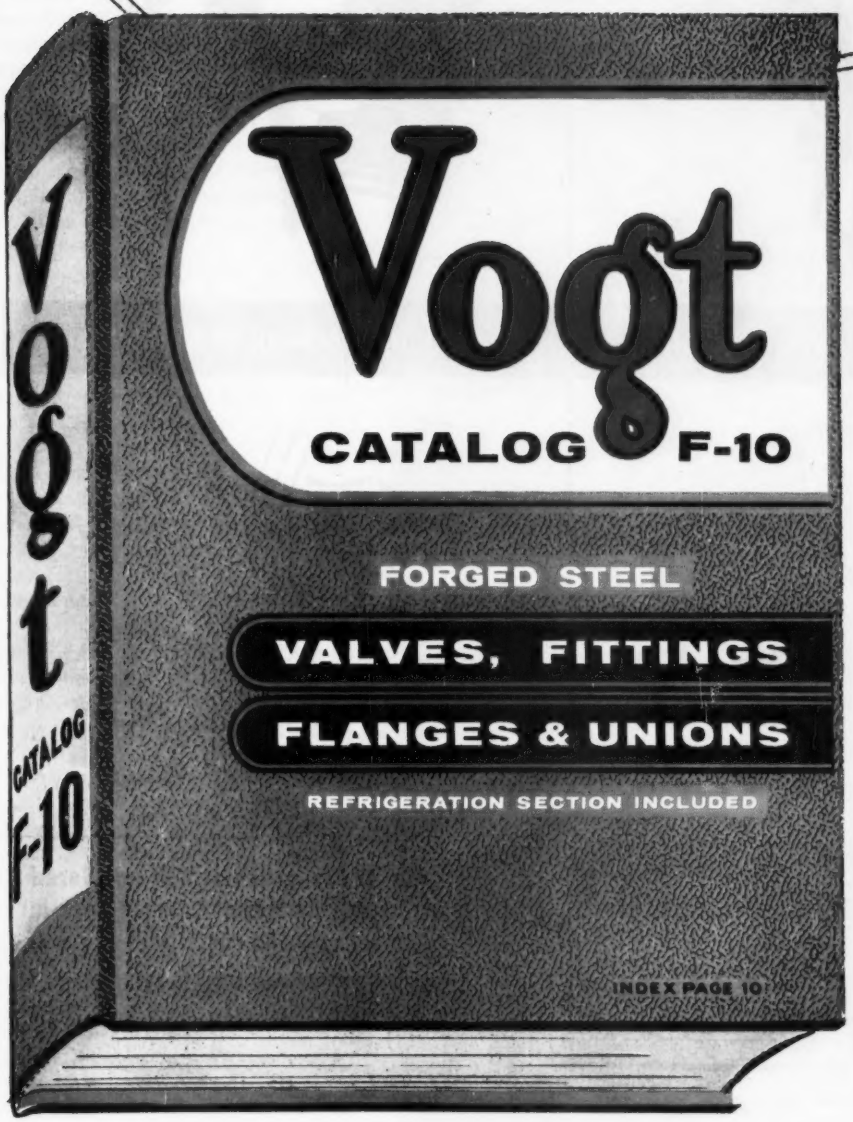
But more than one chemical maker retorts that they do understand the problem. Certain practices, such as double bidding, will always be used. But, the chemical makers contend, they have more sense of obligation than some equipment makers give them credit for—and the firm that offers the most help gets the job.

EQUIPMENT

Flexible Hose: Thermoid Division of H. K. Porter Co. (Tacony and Combly Streets, Philadelphia) has a new flexible hose designed to resist chemical attack at temperatures up to 600 F for short periods, 350 F for long periods. The new hose is made of Du Pont's Viton synthetic rubber (a linear copolymer of vinylidene fluoride and hexafluoropropylene), with a Dacron jacket for strength and abrasion resistance. The hose, offered in sizes from 1-4 in. (ID), resists a wide range of chemicals—including petroleum fuels and lubricants, aromatics, chlorinated hydrocarbons, tetraethyl lead compounds, concentrated acids and bases—but swells in contact with ketones or esters of low molecular weight.

Presenting a NEW

Vogt Blue Book



Catalog F-10 is the one source for the most complete line of forged steel valves, fittings, flanges, and unions available to industry. Its 432 thumb indexed pages feature new types and trims to best meet severe fluid and gas handling duties at all temperatures and pressures.

A copy of this new catalog is available to you. Please send your request, on your company letterhead, to Dept. 24A-FCW

Leading petroleum refineries, petro-chemical and chemical plants, and power plants get top performance with safety from Vogt forged steel valves, fittings, flanges, and unions.

OTHER VOGT PRODUCTS:
Steam Generators, Petroleum Refinery and Chemical Plant Equipment, Heat Exchangers, Ice Making and Refrigerating Equipment

HENRY VOGT MACHINE COMPANY
LOUISVILLE, KENTUCKY

SALES OFFICES
New York, Chicago, Cleveland, Dallas, Camden, N.J., St. Louis, Charleston, W.Va., Cincinnati

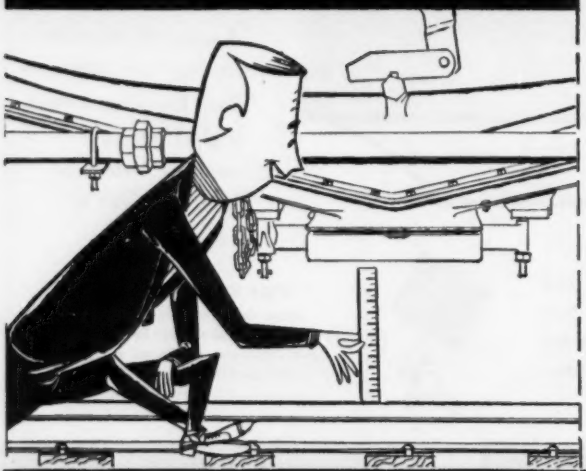
No bills for bags, drums, containers

Easier, safer loading and unloading

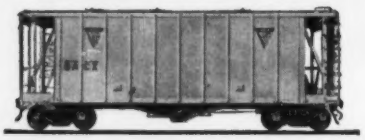
No sanitation problems in transit

No packing, racking or stacking

Far more clearance for unloading



Bulk shipping of dry, granular and powdered products in General American Airslide® Cars is safer, easier—and costs less!



Over 3000 Airslide Cars now in service or on order. A blower is all you need to unload cars into any conveying system. Write for bulk shipping information on your products.

AIRSLIDE GENERAL AMERICAN TRADE MARK

GENERAL AMERICAN TRANSPORTATION CORPORATION

135 South La Salle Street, Chicago 90, Illinois

AIRSLIDE CARS are successfully shipping flour, semolina, sugar, starch, plastics, chemicals and other products.

Laying Down the Credit Line to Salesmen

Giving sales trainees a basic outline of a company's credit policies is becoming more common in the chemical industry. This week, credit executives ponder the plan's merits. Consensus: it's an asset in improving the often touchy sales-credit relationship, encouraging exchange of information, helping salesmen to understand credit problems and the significance of credit in marketing.

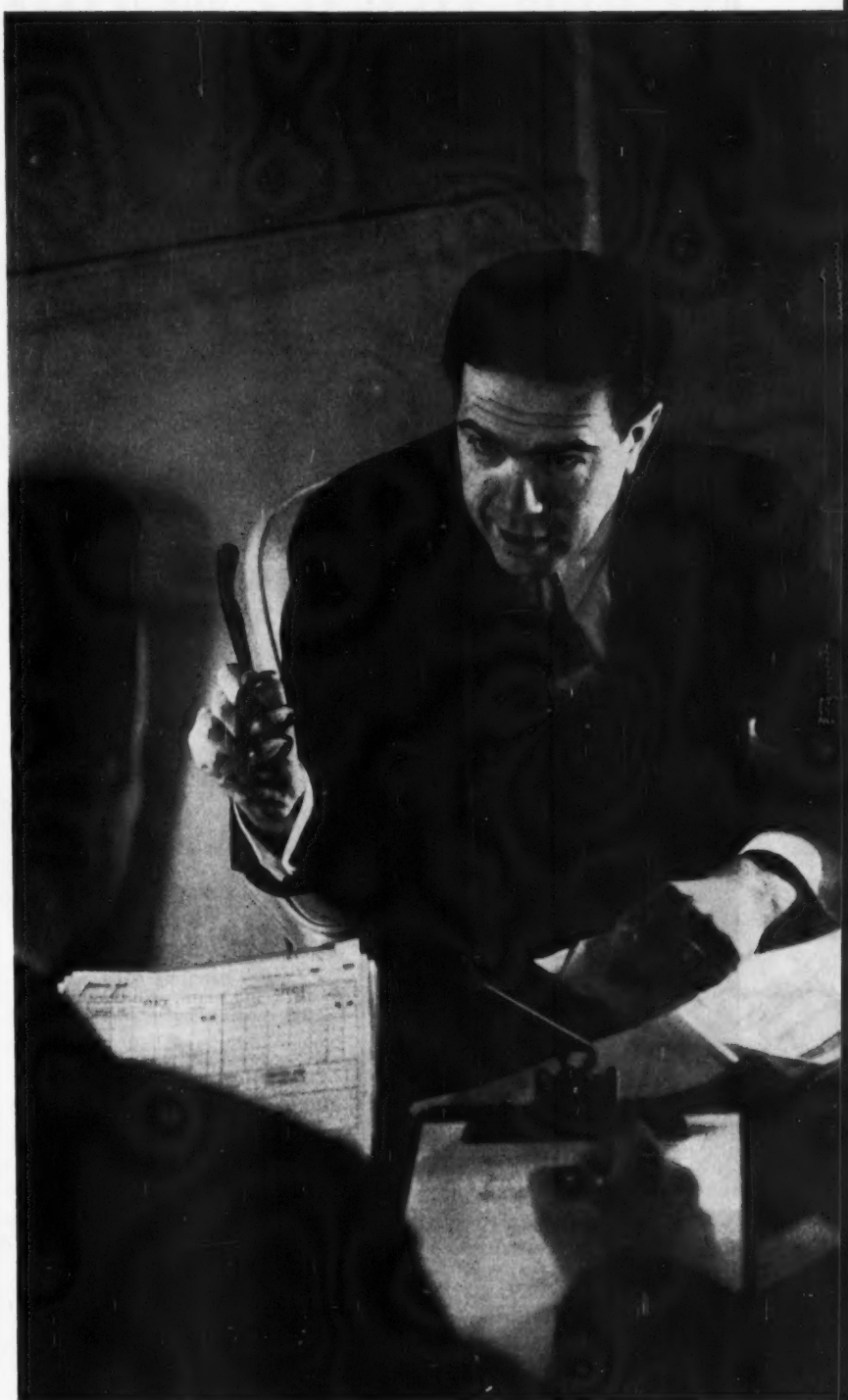
There's a reason for the wider interest in credit orientation. Companies in several major chemical product lines—fertilizers, agricultural chemicals, plastics, air products and, to some extent, paints and varnishes—have serious credit problems. In these fields, a company's credit policy is a major sales tool.

Although many credit men endorse the idea of credit training for sales staffers, such orientation is definitely still basic and limited. Credit executives don't want salesmen usurping the functions of the credit man, blundering into sensitive and complicated credit relations with customers. There are few areas in which customers are more sensitive than about their credit standing.

Training Scope: Ways of meshing credit orientation with sales training vary widely. In some firms it's merely a matter of a sales trainee spending a few hours in informal conference with the sales manager. Other firms schedule lectures (from 45 minutes to several hours in length) by the credit manager. Others let credit education come about in normal contacts salesmen will have with credit departments during the course of their career. A few give no training at all.

A *CW* check indicates that chemical industry practice may not be far out of line with a recent survey conducted by T. D. McElroy of the Spang-Chalfant Division of National Supply Co.* It showed that of 59 firms surveyed, 46% had formal programs, 22% scheduled brief visits with credit personnel and 32% had no orientation. Only a few programs in the chemical industry, evidently, are as complete as the one set up by National

*National specializes in distribution of steel products and well-drilling equipment.



CW PHOTO—LIONEL CRAWFORD

Salesman-credit manager conference is popular training method.

The undersigned acted as financial advisor to

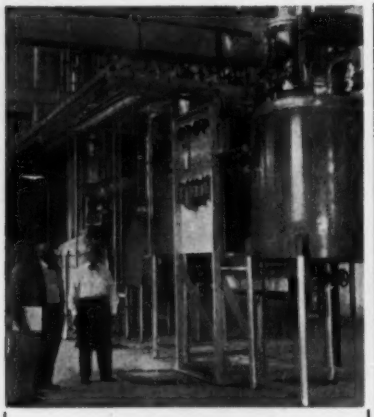
ATLAS POWDER COMPANY

in connection with its investment in

SOLAR NITROGEN CHEMICALS, INC.

F. EBERSTADT & CO.

February 24, 1959



America's Largest Continuous Producer of

ALUMINUM ISOPROPYLATE

Dependable Deliveries from a Dependable Supplier

CHATTEM CHEMICALS

Chattanooga 9, Tennessee

Address Inquiries to:

F. L. BODMAN COMPANY

101 N. 33rd St., Philadelphia 4, Pa.

Save 3 WAYS with LIQUID SULPHUR

- Lowers handling costs in your plant. Eliminates all dusting losses, too.
- No contamination. Increases yields and reduces corrosion.
- New, lower rail freight rates make tank car deliveries competitive with water transportation.

Call or write today for information about this new low-cost answer to your sulphur needs.

JEFFERSON LAKE SULPHUR COMPANY

1810 Prudential Bldg., Houston 25, Texas

Telephone JAckson 6-2811

Supply as one result of the survey.

National's all-day program provides for 125 minutes of lectures on the treasury department, credit policies, and department organization; and legal-credit relationships; 40 minutes of specialized briefing on financial characteristics of a key customer group and use of liens; 90 minutes on a case history problem; four 40-minute conferences on oil prospecting and export situation, general and divisional credit problems and credit-office functioning and planning.

In one fashion or another, chemical credit men cover the essential points of credit training for salesmen as revealed in McElroy's survey: explanation of credit policy, credit procedures, credit department organization, and discussion of credit problems. In these explanations, and by answering trainees' questions, the credit man helps sell the salesman on the importance of the credit department to the company.

Emphasis in many firms falls heavily on the positive side, pointing up how credit departments and sales can work together fruitfully to boost sales and profits. It's also made plain how credit control aids customers to stay financially sound—and thus remain customers.

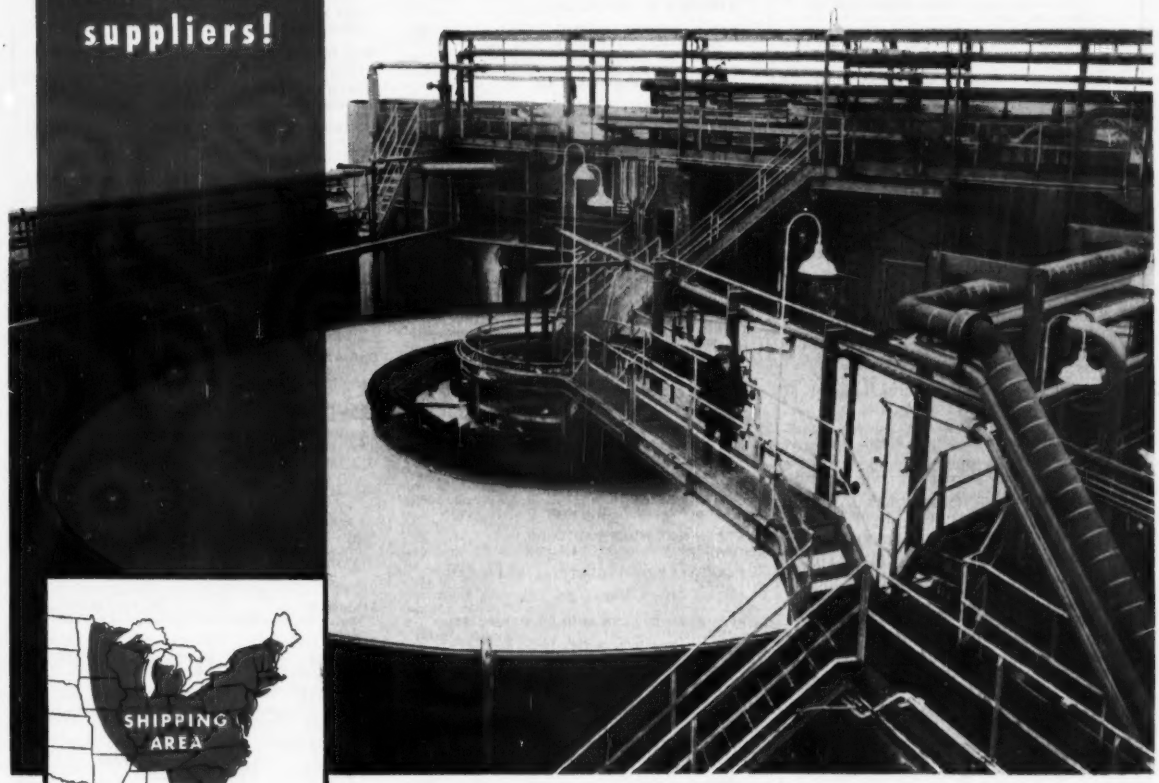
Some credit managers make it a point to give the broad picture of credit department operations. They reveal to trainees what goes into a credit file, what the sources of the information are, how sales and credit can cooperate in information exchange. In some firms, where both sales and credit staffs are limited in size, attention is given to credit liaison work by salesmen in customer work. A large plastics firm, for example, recently made a complete study of the new investment company program (*CW, Dec. 13, '58, p.22*) of the Small Business Administration and how customers might make effective use of it. Salesmen gave copies of the report to their customers.

The credit manager in the same firm makes it a point to brief salesmen about the credit situation in the trainee's territory.

Some firms make use of visual aids in lecture credit presentations. They show department organization, internal credit forms, copies of dunning letters. And though the emphasis varies, many use the training session

take another look at CHLORINE suppliers!

QUALITY and CAPACITY BOTH UP at Westvaco®



Currently the most dynamic factor in the chlorine-caustic picture, Westvaco merits new consideration in your purchasing-allotment plans.

Recent modernization and innovations at our So. Charleston, W. Va. plant increased capacity 30%. With the most modern facilities and fully automatic quality controls, Westvaco Chlorine is better than ever. It's low in moisture, organic impurities, choloroform, chloroethylenes and residual gases.

Unchanged . . . our strategic location for fast service by rail or waterway throughout the industrial East, mid-South and Midwest.

We'd be glad to discuss our new capabilities with you anytime.

Putting Ideas to Work

fmc
FOOD MACHINERY AND CHEMICAL CORPORATION ®

FOOD MACHINERY AND CHEMICAL CORPORATION
Westvaco Chlor-Alkali Division
General Sales Offices:
161 E. 42nd STREET, NEW YORK 17

CHEMICAL WEEK • ADVERTISERS' INDEX

March 14, 1959

ADVANCE SOLVENTS & CHEMICAL DIV. OF CARLISLE CHEMICAL WORKS, INC. 30
Leonard Advertising Agency

AMERICAN AGRICULTURAL CHEMICAL CO. 64
Agency—Marsteller, Rickard, Gebhardt & Reed, Inc.

AMERICAN CYANAMID CO. 3rd cover
Agency—Hazard Adv., Agency

AMERICAN POTASH & CHEMICAL CORP. 78
Agency—The McCarty Co.

AMOCO CHEMICAL CORP. 4th cover
Agency—D'Arcy Advertising Co.

ARGUS CHEMICAL CORP. 67
Agency—Geer, DuBois & Co., Inc.

BAKER CHEMICAL CO., J. T. 43
Agency—Wildrick & Miller, Inc.

BAKER PERKINS, INC. 54
Agency—Price, Tanner & Willox, Inc.

BECCO CHEMICAL DIV., OF FOOD MACHINERY & CHEMICAL CORP. 63
Agency—John Mather Lupton, Inc.

BLOCKSON CHEMICAL CO. 16
Agency—Wm. Balsam Adv.

CATALYTIC CONSTRUCTION CO. 59
Agency—Doremus-Eshleman Co.

CELANESE CORP. OF AMERICA 37
Agency—Ellington & Co., Inc.

CHATTEM CHEMICALS 92
Agency—Lookout Advertising Agency

CHEMICAL CONSTRUCTION CORP. 9
Agency—Godwin Advertising Co.

CHEMICAL ECONOMIC SERVICES 88
Agency—R. W. Westervelt & Co., Adv.

CHEMICAL PRODUCTS DIV., CHEMTRON CORP. 24
Agency—The Griswold Eshleman Co.

CLEVELAND ELECTRIC ILLUMINATING CO., THE 42
Agency—McCann-Erickson, Inc.

COLUMBIA SOUTHERN CHEMICAL CORP. 14
Agency—Ketchum, MacLeod & Grove, Inc.

COMMERCIAL SOLVENTS CORP. 5
Agency—Fuller & Smith & Ross, Inc.

DELHI TAYLOR OIL CORP. 57
Agency—Sam J. Gallay Adv.

DISTILLATION PRODUCTS INDUSTRIES DIV. OF EASTMAN KODAK CO. 8, 58
Agency—The Rumrill Co., Inc.

DOW CHEMICAL CO., THE 52-53
Agency—MacManus John & Adams, Inc.

DRACCO DIV., FULLER CO. 15
Agency—The Jayme Organization, Inc.

DU PONT DE NEMOURS & CO., INC., E. I. GRASSELLI DIV. 44
Agency—Batten, Barton, Durstine & Osborn, Inc.

EASTERN STATES PETROLEUM & CHEMICAL CORP. 12
Agency—Erwin Wasey-Ruthrauff & Ryan, Inc.

EASTMAN CHEMICAL PRODUCTS CO. 87
Agency—Fred Wittner Adv.

EBERSTADT & CO., F. 92
Agency—Doremus & Co.

EL DORADO DIV., FOREMOST FOOD & CHEMICAL CORP. 10
Agency—Garfield Adv., Inc.

ELLIOTT CO. 6
Agency—Downing Industrial Adv., Inc.

ENJAY CO. 84
Agency—McCann-Erickson, Inc.

GENERAL AMERICAN TRANSPORTATION CORP. AIRSLIDE CARS DIV. 90
Agency—Edward H. Weiss & Co., Inc.

GENERAL ANILINE & FILM CORP. 45
Agency—L. W. Frohlich & Co.

GRAVER TANK & MFG. CO. 61
Agency—Ladd, Southward & Bentley, Inc.

GULF OIL CORP. 2
Agency—Ketchum, MacLeod & Grove, Inc.

HARSHAW CHEMICAL CO. 13

HERCULES POWDER CO. 68
Agency—Fuller & Smith & Ross, Inc.

HOOKER CHEMICAL CORP. 73
Agency—The Rumrill Co., Inc.

JEFFERSON CHEMICAL CO. 23
Agency—Darwin H. Clark Co.

JEFFERSON LAKE SULPHUR CO. 92
Agency—Bauerlein Adv., Inc.

KAISER ALUMINUM & CHEMICAL CORP. 40-41
Agency—Young & Rubicam, Inc.

KENNEDY VAN SAUN MFG. & ENGINEERING CORP. 36
Agency—Robert S. Kampmann, Jr., Adv.

KESSLER CHEMICAL CO. 50
Agency—Willard G. Myers Adv., Agency

LUCIDOL DIV., WALLACE & TIERNAN, INC. 80
Agency—Barber & Drullard, Inc.

LUZERNE RUBBER CO. 82
Agency—Eldridge, Inc.

METASAP CHEMICAL CO., SUB. OF NOPCO CHEMICAL CO. 86
Agency—Gray & Rogers Adv.

MICHIGAN CHEMICAL CORP. 74
Agency—Wesley Aves & Associates

NATIONAL ANILINE DIV., ALLIED CHEMICAL CORP. 33
Agency—James J. McMahon, Inc.

NORTH AMERICAN CAR CORP. 1
Agency—Doremus & Co., Adv.

PENNSYLVANIA INDUSTRIAL CHEMICAL CORP. 60
Agency—W. S. Walker Adv., Inc.

PFAUDLER DIV., PFAUDLER PERMUTIT, INC. 46-47
Agency—The Rumrill Co., Inc.

PITTSBURGH COKE & CHEMICAL CO. 83
Agency—W. S. Walker Adv., Inc.

PRIOR CHEMICAL CORP. 88
Agency—Robertson Martin Adv.

RISDON MFG. CO. 38
Agency—Emil, Mark & Co.

ROHM & HAAS CO. 81
Agency—Arndt, Preston, Chapin, Lamb & Keen, Inc.

SEMET-SOLVAY PETROCHEMICAL DIV. ALLIED CHEMICAL CORP. 62
Agency—Benton & Bowles, Inc.

SHELL CHEMICAL CORP. 2nd cover
Agency—J. Walter Thompson Co.

SINCLAIR PETROCHEMICALS, INC. 77
Agency—Geyer, Morey, Madden & Ballard, Inc.

STAUFFER CHEMICAL CO. 11
Agency—John Mather Lupton Co.

STEPAN CHEMICAL CO. 20
Agency—Frank C. Nahser, Inc.

TAYLOR FORGE & PIPE WORKS 18-19
Agency—Marsteller, Rickard, Gebhardt & Reed, Inc.

THIOKOL CHEMICAL CORP. 51
Agency—Dancer-Fitzgerald-Sample, Inc.

UNION CARBIDE CHEMICALS CO., DIV. OF UNION CARBIDE CORP. 89
Agency—J. M. Mathes, Inc.

VIRGINIA-CAROLINA CHEMICAL CORP. 17
Agency—Albert Sidney Noble Adv.

VIRGINIA ELECTRIC & POWER CO. 34
Agency—Cargill & Wilson, Inc.

VOGT MACHINE CO., HENRY 39
Agency—Farson, Huff & Northlich, Adv.

WESTVACO CHLOR-ALKALI DIV. OF FOOD MACHINERY & CHEMICAL CORP. 93
Agency—James J. McMahon Adv.

WEST VIRGINIA PULP & PAPER CO. 4
Agency—Fuller & Smith & Ross, Inc.

WILLIAMS & CO., C. K. 56
Agency—William A. Hatch, Inc.

WINTHROP LABORATORIES, INC. 82
Agency—Thompson-Koch Co.

WYANDOTTE CHEMICAL CORP. 71
Agency—Brooke, Smith, French & Dorrance, Inc.

tracers SECTION

(Classified Advertising)
F. J. Eberle, Business Mgr.

BUSINESS OPPORTUNITIES 95

CHEMICALS: Offered/Wanted 95

EMPLOYMENT 95

EQUIPMENT: Used/Surplus New For Sale 95

ADVERTISING STAFF

Atlanta 3 Michael Miller, 1301 Rhodes-Haverty Bldg., JAckson 3-6951

Boston 16 Paul F. McPherson, 350 Park Square Building, HUbbard 2-7160

Chicago 11 Alfred D. Becker, Jr., R. J. Claussen, 520 N. Michigan Ave., MOhawk 4-5800

Cleveland 13 H. J. Sweger, Duncan C. Stephens, 1164 Illuminating Bldg., 55 Public Square, SUperior 1-7000

Dallas 1 Gene Holland, Gordon Jones, The Vaughn Bldg., 1712 Commerce St., Riverside 7-5117

Denver 2 J. Patten, 1740 Broadway, ALpine 5-2981

Detroit 26 H. J. Sweger, Jr., 856 Penobscot Bldg., WOodward 2-1793

Frankfurt/Main Michael R. Zeynel, 85 Westendstrasse, Germany

London E.C. 4 E. E. Schirmer, McGraw-Hill House, 95 Farringdon St., England

Los Angeles 17 Robert Yocom, 1125 West Sixth St., HUntley 2-5450

New York 36 Knox Armstrong, B. A. Johnson, P. E. McPherson, Charles F. Onasch, L. Charles Todaro, 500 5th Ave., OXford 5-5959

Philadelphia 3 William B. Hannum, Jr., 6 Penn Center Plaza, LOcust 8-4330

Pittsburgh 22 Duncan C. Stephens, Room 1111 Henry W. Oliver Bldg., EXpress 1-1314

San Francisco 4 William C. Woolston, 68 Post St., DOuglas 2-4600

St. Louis 8 R. J. Claussen, 3615 Olive St., Continental Bldg., JEfferson 5-4867

to integrate these three points:

- Explain the need for notifying the credit department that sales solicitation of a prospect is under way. This can often prevent a crisis that could occur if the sales department demands immediate credit approval for a new customer as soon as the first order is obtained.
- Encourage salesmen to give the credit department information on any special customer problems—such as off-specification claims—that may account for payment slowness. This often can forestall embarrassing dunning letters.
- Stress the importance of never telling customers to ignore credit department reminders and pressure.

Many firms broaden training by counseling individual salesmen during normal day-to-day contacts, once formal sales education is finished. This permits answering specific questions stemming from daily calls on customers, and allows detailed discussion of special problems. In some cases, credit men rely on product managers to furnish follow-up credit education to the company's salesmen in remote territories.

Cautious Slant: A clear need for better sales-credit liaison is recognized by some credit executives. But many believe training programs offered now should not be greatly extended. Reason: it would be taken as an invitation for sales staffers to become deeply involved with credit. It could lead to tactless disclosure to customers of creditor meeting results and clearances and reasons for credit turndowns. When this happens, as one veteran credit man put it, "it can hurt."

Somewhat similar reasoning is behind a general reluctance (despite a few exceptions) to have salesmen handle credit liaison. Moreover, this idea would entail detailed briefing of salesmen on information in credit files. And that would take too much time and effort.

There's little doubt that limited credit orientation for salesmen is beneficial. Those that have tried it report that mutual understanding is enhanced, that sales and credit departments cooperate more readily to win sales and profits. And that's why more credit briefings are now being included in sales training programs—and why current briefings may be slightly expanded and formalized.

Tracers

TO THE CHEMICAL PROCESS INDUSTRIES

ADDRESS BOX NO. REPLIES TO: Box No. Classified Adv. Div. of this publication. Send to office nearest you.
NEW YORK 36: P. O. BOX 12
CHICAGO 11: 520 N. Michigan Ave.
SAN FRANCISCO 4: 68 Post St.

POSITIONS VACANT

Assistant Production Manager. Carbon dioxide firm with national distribution is expanding. Headquarters in Chicago. Some traveling involved. Consists of Engineering and Production work. Engineering degree necessary. Liberal retirement and insurance plan. Starting salary commensurate with experience. All replies confidential. P-1189, Chemical Week.

Openings in production, research, and control in a new food processing plant being built by a large Southern, AAA-1 Concern, in New Orleans Area. An opportunity to start in a fast growing industry. In reply, state complete qualifications and salary requirements. P-1176, Chemical Week.

Director Of Urea Adhesives Laboratory, Senior Chemist in charge of Urea-Formaldehyde Resin and Hardener Formulation, Product Development, Customer Application, Plant Control. Unusual Opportunity. Synvar Corporation, 726 King Street-Wilmington, Delaware.

Chemical Sales Trainee For A-1 Co. B.S. degree in Chemistry to be trained for sales and technical service. Train in Grand Central Area. Travel after one year training. Salary open. Please send comprehensive resume. P-1166, Chemical Week.

Chemical Sales Opening—Chicago—St. Louis Area. Experienced man with technical background preferred. Salary, expenses, car, benefits. Send resume to Sales Manager, Chemical Division, Tennessee Products & Chemical Corporation, P. O. Box 9, Nashville 2, Tennessee.

Regional Sales Manager-Leading U.S. Company requires aggressive man to supervise sales of organic chemicals throughout mid-western U.S. Degree in chemistry plus minimum of 6 years in organic chemical sales required. Send full details on experience and salary required to P-1182, Chemical Week.

Research & Development Chemist: Well-known textile chemical manufacturing company, Southern New England plant, seeks candidate with degree in organic chemistry and experience in development and manufacture of latest textile chemicals such as ethylene urea resins, water repellents, softeners, and other finishes for cottons and synthetics. Opportunity for man who can direct laboratory and with ability to organize with management liaison between laboratory and full plant operations. All inquiries held in strict confidence. Please send complete resume to P-1183, Chemical Week.

Petrochemical Marketing Research. Opening for chemist or chemical engineer with marketing research or commercial analysis experience. Position is in maketing research section of a leading national company expanding in the petrochemical field. Excellent opportunity for future advancement in development, sales, operation, and administrative fields, as well as in marketing research. Location—Houston, Texas. Salary open, depending upon qualifications. Please send personal resume to: W. W. Clark, Continental Oil Company, P.O. Box 2197, Houston 1, Texas.

Rubber Accelerators Wanted: Man up to date manufacturing experience Thiazole accelerators. Company not now in this business but moving in that direction. All replies held strictly confidential. P-1179, Chemical Week.

Market Development — Opportunity to join Spencer Chemical Company's expanding Plastics Market Development program in a position which will permit the use of sales and technical abilities. We are seeking men who have a chemical or engineering background, and preferably three to five years' experience with thermo-plastics. A working knowledge of polyethylene and nylon is desirable but not essential. A unique opportunity exists to work with a new thermo-plastic-polypropylene. Please send detailed resume to: W. H. Swope, Personnel Manager, Spencer Chemical Co., 610 Dwight Building, Kansas City 5, Mo.

POSITION VACANT

Production Superintendent—Bichromate, Qualified to take full charge of the operation of a new plant for the production of bi-chromate and chrome chemicals. Submit resume of education, past experience, and salary requirements. All replies held in strict Confidence. P-1177, Chemical Week.

POSITIONS WANTED

Manager Chem. Sales & Market Development 9 yrs. product and sales management. Dramatic results in expanding sales. Organized new chem. div. Have developed new national markets for variety of products. B.S.1939. PW-1072, Chemical Week.

Chemist: bright, ambitious, resourceful, seeks employer desiring same. Opportunity paramount. PW-1066, Chemical Week.

Manager of important Chemical distributor wishes to make change. Presently employed. Wide contacts with trade and producers on national and local basis. Heavy experience market development. Interested in management or sales. PW-1178, Chemical Week.

Quality Control position. Nine years experience in organic chemicals production, quality control, and process control. MS Ch. E. Midwest location. PW-1117, Chemical Week.

Manager, Chemical Sales, 6 years experience surface active agents, desires responsible position in same or related field. PW-1188, Chemical Week.

FOR SALE

Allis-Chalmers 7' x 50' Rotary Dryer, Double shell, indirect-direct heat. Perry Equipment Corp., 1415 N. 6th St., Phila. 22, Pa.

Baker-Perkins 100 Gal. Dispersion Blade Mixer, stainless steel, jktd., vacuum, 75 HP. Perry Equipment Corp., 1415 N. 6th St., Phila. 22, Pa.

Bird suspended type centrifuge with 40" rubber covered imperforate basket, driven by Louis Allis 2-speed 4-/10 G.P. motor for 440 volts, 60 cycles, 3 phase current. Complete with brake, interlock, ammeter, push-button station, 2-speed magnetic switch, etc. Good operating condition. S. B. Penick & Co., Lyndhurst, N. J.

Expanded Perlite Powder. Finely divided white siliceous inorganic powder packed in 4 cu. ft. 50 lb. paper bags. Used as filler and extender in coatings, insecticides, ceramics and plastics. Priced $50. per ton f.o.b. Nashville, Tennessee. For samples and information write Sales Manager, Chemical Division, Tennessee Products & Chemical Corporation, P. O. Box 9, Nashville 2, Tennessee.

Reactor T347 S.S. New 4000 gal. jktd. 150# int. press. ASME. Used good cond. 1500 gal. Pfaudler glass lined agit. jktd. Reactor 50# int. press. 90# jkt. press. 15 HP XP motor. Located southwest. FS-1097, Chemical Week.

Terminal For Sale by Phillips Petroleum Company—a modern storage terminal located at 292 22nd Avenue South, Minneapolis, Minnesota. Ideal storage for refined petroleum products, chemicals, or grain in six large tanks: 21,000 Bbl. Cone Roof, 35,000 Bbl. Cone Roof, 65,000 Bbl. Cone Roof, 90,000 Bbl. Ballon Roof, 32,000 Bbl. Floating Roof, 108,000 Bbl. Cone Roof. Total storage capacity is 351,000 barrels or approximately 1½ million bushels. Excellent barge, truck and rail loading and unloading facilities. For details, write Phillips Petroleum Company, Bartlesville, Oklahoma, Attention: F.B. Neptune, Room 678 AB.

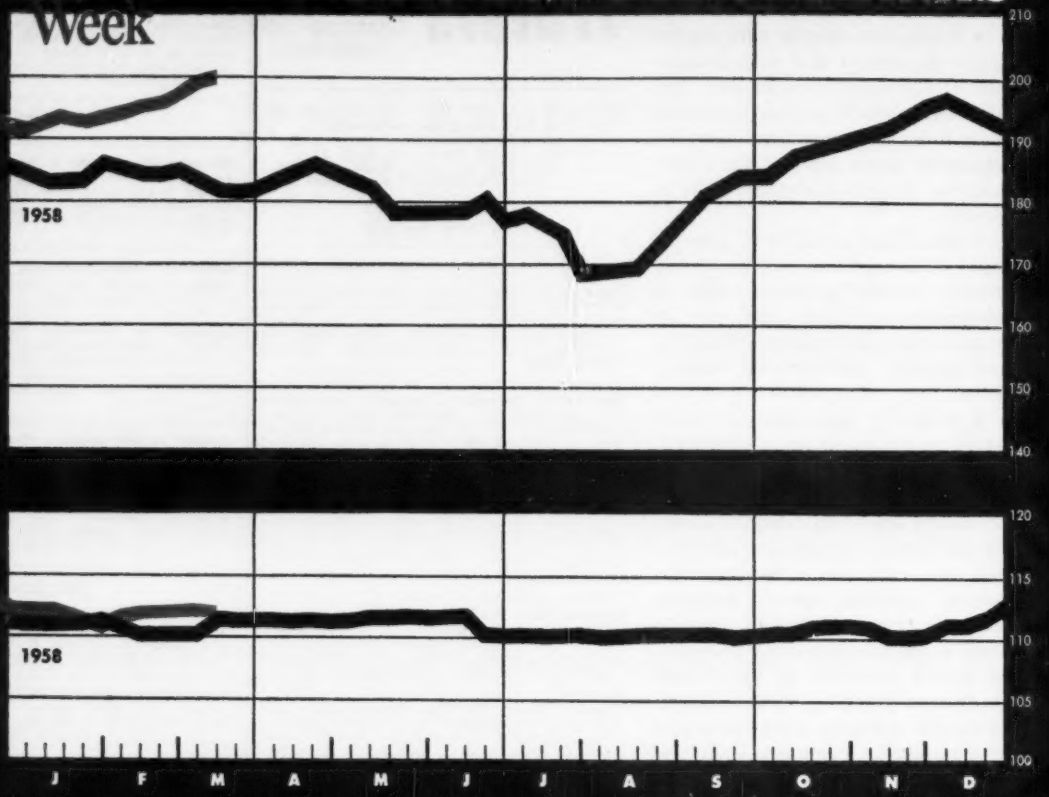
CHEMICALS WANTED

Acids Surplus Wanted—Chemicals, Pharmaceuticals, Oils, Plasticizers, Resins, Dyes, Solvents, Pigments, Etc. Chemical Service Corporation, 96-02 Beaver Street, New York 5, N. Y. WHitehall 3-6970.

WANTED/FOR SALE

This Tracer Section can be used whenever you are looking for or offering Equipment, Plants, Supplies, Chemicals, Opportunities, Special Services. The rates are low—just call or write Classified Advertising Division, Chemical Week, P.O. Box 12, N. Y. 36, N. Y., LOngacre 4-3000.

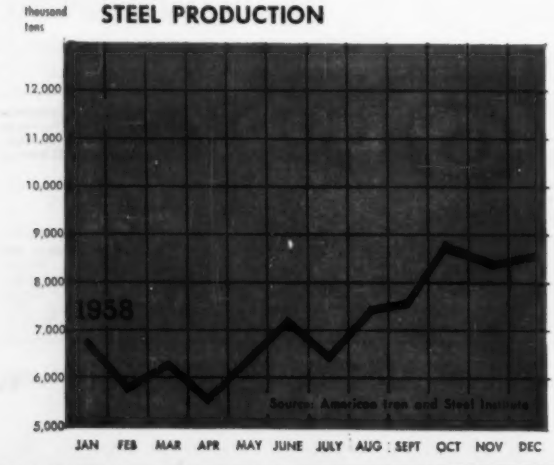
BUSINESS BENCHMARKS

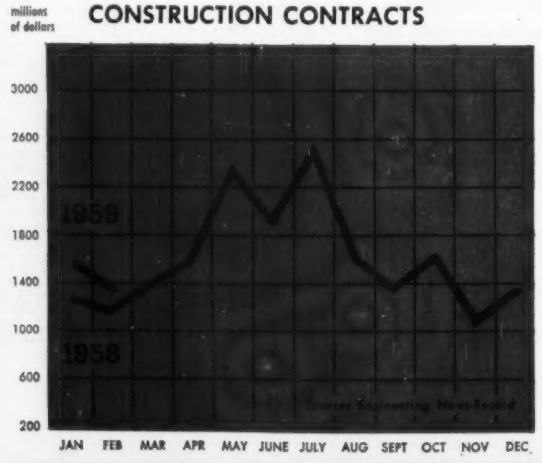


MARCH 14, 1959

WEEKLY BUSINESS INDICATORS	Latest Week	Preceding Week	Year Ago
Chemical Week output index (1947-1949=100)	200.8	200.5	182.0
Chemical Week wholesale price index (1947=100)	112.0	111.9	111.0
Stock price index (11 firms, Standard & Poor's)	52.92	51.31	39.21
Steel ingot output (thousand tons)	2,535	2,506	1,425
Electric power (million kilowatt-hours)	12,972	13,259	11,803
Crude oil and condensate (daily av., thousand bbls.)	7,199	7,208	6,841

MONTHLY INDICATORS—Production (1947-49=100)	Latest Month	Preceding Month	Year Ago
All manufacturing	142	140	132
Nondurable goods manufacturing	135	131	125
Durable goods manufacturing	154	152	143
Chemicals and allied products	196	195	183
Industrial chemicals	215	214	197
Petroleum and coal products	147	144	134

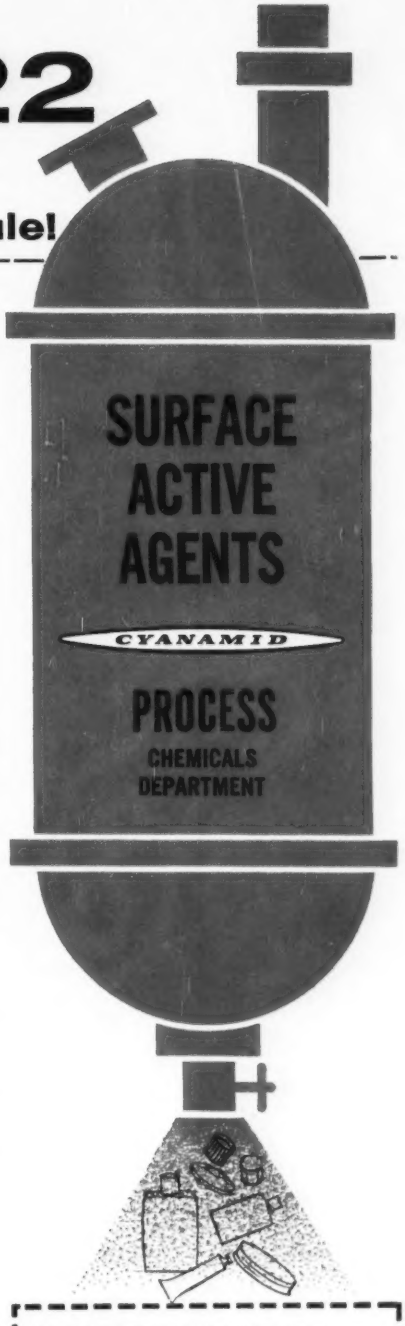




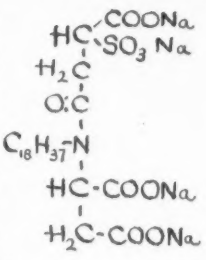
AEROSOL® 22

Surface Active Agent

DELIVERS The Promise of an Unusual Surfactant Molecule!

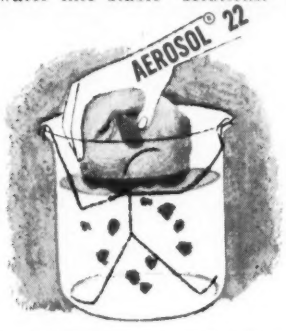


AEROSOL 22 is unsurpassed or unequaled in performance by other commercial surface active agents in the many important respects detailed below. These outstanding properties are a result of a highly active molecular structure that combines a sodium sulfonate and three sodium carboxy groups with an amide linkage and an 18-carbon aliphatic. In spite of a molecular weight of 653, it is completely soluble in water—yet its hydrophobic properties are maintained in high-temperature ranges where many surfactants lose their effectiveness. This molecular "powerhouse" promises unusually good results—and *delivers* them in a wide variety of applications.



Solubilizing the "Insolubles"

AEROSOL 22 goes well beyond emulsification in putting certain compounds that are normally allergic to water into stable "solutions." It

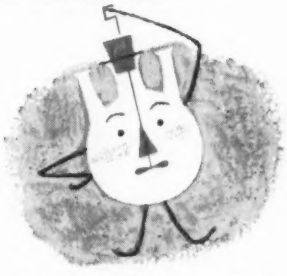


will also increase the solubility of certain soaps and detergents in aqueous media containing high salt concentrations. It is almost impossible to "salt out" AEROSOL 22 from its aqueous solutions by adding salts containing monovalent cations—and this stability to electrolytes is largely passed on to the materials it takes into solution. For example, high molecular weight naphthenic and cresylic acids are made soluble in 25% caustic soda.

Emulsion Polymerization Made Easy!

In this popular polymerization technique, much depends on the proper choice of surface active agent for a particular monomer system to assure:

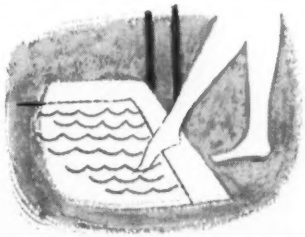
1. Rapid reaction rate.
2. Storage stability with no drop in surface tension—no viscosity increase.
3. No rewetting or water-spotting of dried coatings or films.
4. Excellent rub stability.
5. Good film color.



Here is where the all-round characteristics of AEROSOL 22 combine to do an excellent job, satisfying the list above—and more. Lots of up-to-date information on this rapidly expanding production technique is available through your Cyanamid representative. Perhaps you'll be interested in the synergistic action of other AEROSOL surface active agents used in conjunction with AEROSOL 22 to give even higher levels of polymerization performance.

Wetting . . . to a Degree

The surface tension of water to which 0.1 to 2.0% AEROSOL 22 has been added varies from 40-41 dynes only. This controlled wetting action is particularly good for writing and drawing inks since the degree of wetting is not significantly affected by the evaporation or dilution these inks undergo. In rug and upholstery cleaners, AEROSOL 22 does not wet through and soak the material, but



instead contributes to thorough on-the-surface cleaning. Wherever wetting is to be kept within bounds, AEROSOL 22 is worth investigation.

Sorry . . .

We haven't space to discuss in detail the anti-gelling, demulsification, dispersion and other characteristics. But they're detailed in a 20-page booklet—and the coupon on the right will bring it to you.

American Cyanamid Company
Process Chemicals Department
30 Rockefeller Plaza, New York 20, N. Y.

Please send me:

- ☐ Bulletin on AEROSOL 22 Surface Active Agent
- ☐ Sample of AEROSOL 22

Name_____

Company_____

Address_____

City_____ Zone____ State_____

In Canada: North American Cyanamid Limited, Toronto and Montreal

PANASOL

Aromatic Solvents

a cut above other solvents for pesticide formulating

Pick the product you want to formulate, and you'll find a PANASOL Solvent you will want to use in your formulation. PANASOL Solvents offer high aromaticity and solvency to help you make quality products *competitively* priced. The low phytotoxicity of PANASOL RX-4 and AN-2K permits you to use them with assurance in crop sprays. Mild odor and light, clear color of PANASOL AN-2 makes it suitable for household spray formulations. PANASOL AN-1 and AN-3 are useful in such specialty formulations as Insecticide-Fertilizer combinations. The ease with which PANASOL Solvents formulate with active ingredients simplifies manufacturing.

The whole PANASOL Solvent story is in the hands of your Amoco Chemicals salesman. He's ready to bring it to you when you call. Or write for Bulletin A2. Your inquiry will receive immediate attention.

Typical Properties

PANASOL Solvent No.	AN-1	AN-2	AN-2K	AN-3	AN-5K	RX-3	RX-4
Distillation 2F., ASTM	D-158	D-158	D-158	D-158	D-158	D-86	D-850
IBP, °F.	400	420	398	450	440	276	282
EP, °F.	494	520	525	534	705	—	—
DP, °F.	—	—	—	—	—	360	320
Specific Gravity, 60/60°F.	0.974	0.986	0.950	0.997	0.943	0.843	0.865
Aromatics, Vol. %	98	99	82	99	71	76	94
Mixed Aniline Point, °F.	55	54	75	54	100	84	59
Flash Point, COC., °F.	190	210	200	225	220	—	—
Flash Point, TCC., °F.	—	—	—	—	—	82	85
Solubility*							
DDT (tech.)	39	42	39	43	28	25	29
BHC (tech.)	29	34	41	31	43	23	28
Lindane	9	10	11	14	5	10	15
Dieldrin	26	28	26	27	25	26	29

*Wt. parts in 100 parts solution at 32° F.

AMOCO CHEMICALS

AMOCO CHEMICALS CORPORATION

910 South Michigan Ave., Chicago 80, Illinois